Montana Outdoors

July/August 2004

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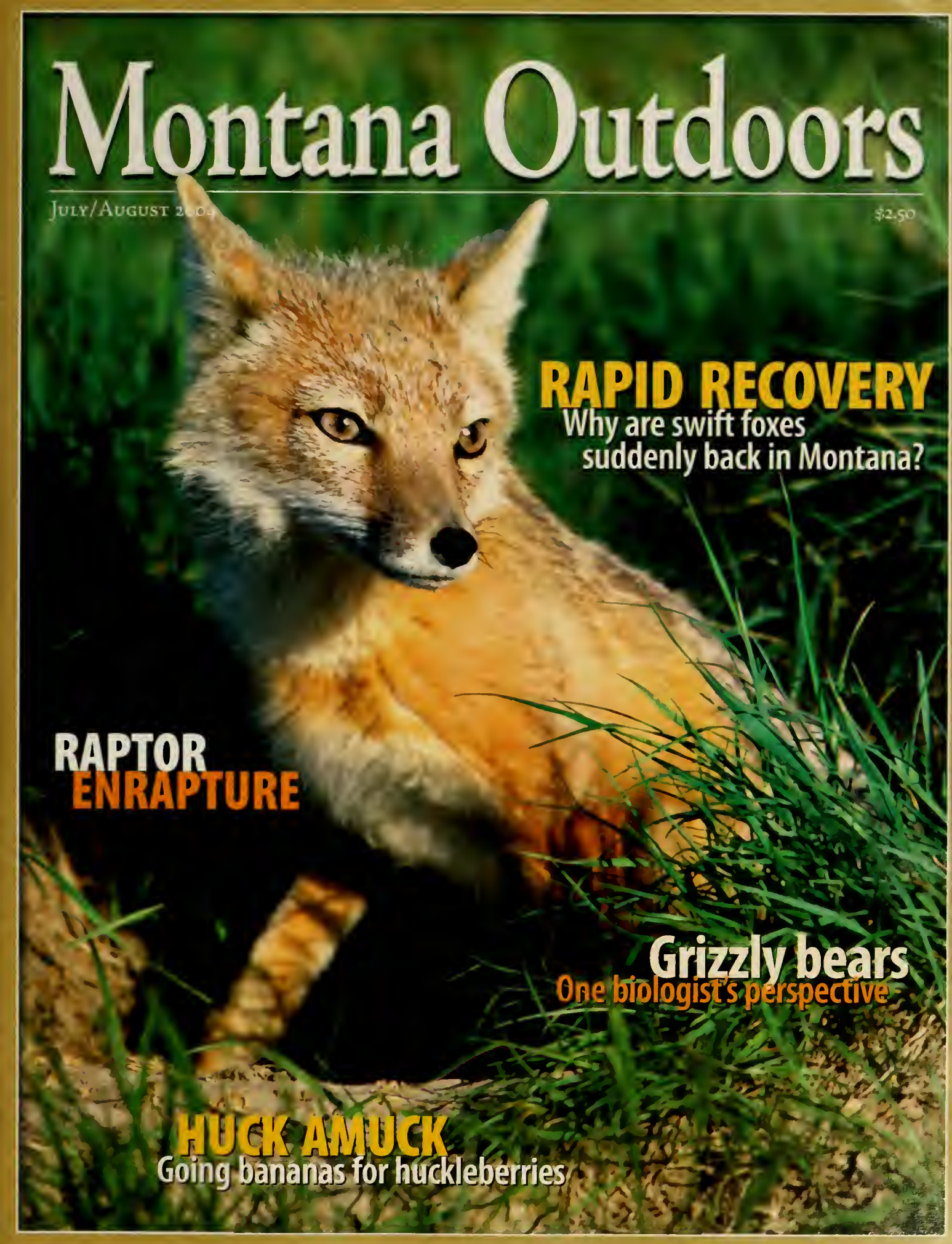

RAPID RECOVERY
Why are swift foxes suddenly back in Montana?

RAPTOR ENRAPTURE

Grizzly bears
One biologist's perspective

HUCK AMUCK
Going bananas for huckleberries

Montana Fish, Wildlife & Parks

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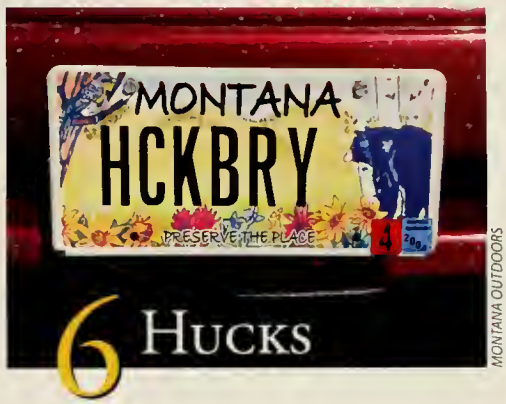

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COVER PHOTO: *Declared locally extinct in 1969, the swift fox has returned to Montana prairies. Find out why on page 28. Photo by Donald M. Jones*

OPPOSITE PAGE: *Scooting down the "Beaverslide," one of many popular attractions at Lewis and Clark Caverns State Park. Photo by Craig and Liz Larcom.*

Too young to fight

I just read the May/June 2004 issue of *Montana Outdoors* and noticed an incorrect date in one of your answers on page 3, column 2.

You stated that 13 smoke jumpers died in 1940. The correct date was August 5, 1949. I lived in Helena then and was going to be a freshman in high school at that time. My friends and I tried to sign up to help fight that fire, but we were turned down due to our age.

Later, I became a student at the University of Montana, where my botany professor was Dr. Diettert. The name of his teenage son, one of the victims in that fire, is on the memorial plaque at the site.

Sam Bakke
Campbell, California

Special little fish

I have just read your article on arctic grayling in the May/June issue. I am 60 years old, have fished all my life, but only started fly fishing 15 years ago while elk hunting in Montana.

The very first fish I caught on a fly was a 10-inch grayling in the Big Hole River, near Wisdom. Since then, I have gone from bass to salmon to tarpon, all on the fly, but that first little grayling will always be special. Not only was it beautiful, but the way it hit the dry fly with reckless abandon will always be a special memory for me.

The situation in the Big Hole

Valley is a tough one, balancing the needs of the ranches with the low water levels, but it seems that there is a cooperative spirit to try to make it work. I can only say that I hope it works so these special little fish can survive.

W. Jack Hamilton III
Atlanta, Georgia

I was interested in the article on arctic grayling. These fish are just one of many reasons Montana is such a great state. It would be a shame to lose them.

Steve Miller
Billings

It surprised me to read that Izaak Walton, the patron saint of fishing, had written about arctic grayling and that he mentioned French anglers prizing the fish. Do grayling still occur in Great Britain and Europe?

Mark Hueseth
Kansas City, Missouri

Editor replies: *According to the Environment Agency of England and Wales, grayling are found throughout the British Isles, as far south as the famous chalk streams of Hampshire to northern Scotland. These aren't actually arctic grayling, but a close cousin. A quick search on the Internet turned up grayling fishing opportunities in lakes and rivers throughout Europe, including Italy, France, Germany, and Sweden. As in North America, European grayling anglers argue whether the fish actually has the faint scent of thyme, from which comes its scientific name* Thymallus.

Mooseasaurus

Thanks for doing a "Montana Outdoors Portrait" on the moose, my favorite animal. Where I live now we see moose all the time, but where I grew up, in central Montana, seeing a moose was a rare event. I remember when I was in grade school, just a few weeks before summer vacation started, and my friends and I saw a moose out in a wheat field. Where it came from, we had no idea, but to us it was as exciting as if we had seen a dinosaur.

Marsha McDowell
Coeur d'Alene, Idaho

Editor Replies: *Moose still show up on the Montana plains occasionally. To learn why, and to read about other weird wildlife sightings, see our story on page 20.*

Better than ever

I was interested to read the interview with Dick Vincent ("Why Montana Went Wild," March/April). I attended Montana State College in the early 1960s and would often fly fish the Madison, Gallatin, and other great trout rivers. My fishing pals and I stayed away from the stocked reaches, but we didn't mind stocking because we figured it concentrated the bait flingers.

In 1972, when I read in *Montana Outdoors* that stocked fish actually suppressed wild trout populations, I changed my mind about stocking in a hurry. Since that time I have returned to Montana many times and have found the wild trout fishery to be better than anything we ever experienced in the 1960s.

William T. Morris
Chicago, Illinois

■ We welcome your comments, questions, and letters to the editor. We'll edit letters as needed for accuracy, style, and length. Mail your letter to: *Montana Outdoors*, P.O. Box 200701, Helena, MT 59620-0701. Or e-mail us at: tdickson@state.mt.us.

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Providing private support for critical Montana Fish, Wildlife & Parks efforts and helping to preserve and enhance Montana's natural, cultural, and recreational resources. To learn more, visit us at: fwp.state.mt.us/foundation, or call (406) 444-6759.

TOM DICKSON

Q. *Why are the headwaters of the Missouri designated at Three Forks and not farther up the Jefferson River?*

A. The U.S. Board of Geographic Names considers the Missouri River's origins to be the confluence of the Gallatin, Madison, and Jefferson rivers at Three Forks, in accordance with the Corps of Discovery's designation in 1805.

Ronald Grim, specialist in cartographic history at the U.S. Library of Congress, says when Lewis and Clark reached what is now known as Three Forks, in late July, they found three rivers of roughly the same flow and size. "They probably could not determine which was the main branch of the Missouri," he says. "It's easy to second guess them now, 200 years later, but it was difficult back then. Bear in mind that at one point they actually thought the Marias River [150 miles downstream] was the Missouri."

ILLUSTRATION BY JEFF TOLBERT

The unofficial source of the Missouri is 298 miles away, up the Jefferson, then up the Beaverhead River, and then east along the Red Rock River to Brower's Spring, on the Continental Divide near Mount Jefferson and Red Rock Pass.

Q. *Where did the name Apsáalooke come from, which was used in the March/April issue to describe what are also known as the Crow Indians?*

A. Susan Stewart Medicine Horse, manager of Chief Plenty Coups State Park and a Crow tribe member, says that Apsáalooke (Ab-ZOLL-ah-guh) is the preferred spelling and pronunciation and that previous versions (Absaroka, Absorakees) were incorrect.

JEFF HAGENER | *Director of Montana Fish, Wildlife & Parks*

OUR POINT OF VIEW

What To Do About Bison

When it comes to bison in Montana, there are widely divergent points of view on whether and how this species should fit into today's environment. Montana FWP, in cooperation with other state and federal agencies, is working to manage bison within the Greater Yellowstone Ecosystem, as well as looking for ways to expand the bison range in other parts of the Great Plains where the animals would be socially and biologically acceptable.

Yellowstone National Park (YNP) bison numbers are growing rapidly, from 3,000 just a few years ago to 4,000 animals today. They are outgrowing the park's capacity and spilling out into surrounding private and national forest land.

The problem is that the bison could transmit brucellosis to cattle, causing the livestock to abort. Montana, which has a no-tolerance policy on brucellosis, has spent $30 million to eradicate the disease among cattle. If the disease returned, ranchers would have to vaccinate hundreds of thousands of cattle and would have difficulty shipping their cattle to states concerned about the disease.

Under the Interagency Bison Management Plan developed in 2000 by FWP and state and federal conservation, agriculture, parks, and livestock agencies, several tools are now being used or considered to manage the expanding YNP bison population:

• Under the plan, bison near the park boundaries are hazed back into the park. When hazing doesn't work, the bison may be captured, tested for brucellosis, and then sent to a meat processor if they test positive or returned to the park if not.

• FWP, YNP, and other agencies are working on developing a vaccination that would render bison immune to brucellosis.

• The 2003 Montana legislature has authorized the FWP Commission to initiate a bison hunt in Montana. If such a hunt were to occur, conditions would be as similar to other big game hunts as possible, with free-ranging bison and elements of fair chase maintained. This would not be a population control measure but rather a limited opportunity for hunters to have some role in bison management. FWP is now working on an environmental assessment of a bison hunt.

• Currently FWP is working with the federal Animal and Plant Health Inspection Service on the feasibility of quarantining some of the bison that leave YNP. The idea is to stringently quarantine brucellosis-free bison for several years. Then the young of these animals, if also free of the disease, could be reintroduced to parts of the bison's historic range. Just as elk and pronghorn restorations were in the latter 20th century, this could be one of the great conservation accomplishments of the early 21st century.

There is still a lot to be learned and worked out before that occurs. But I think it can and will be done. I'm confident because there are two strong movements underway. One is to eliminate the threat of brucellosis to Montana's valuable cattle industry. The other is to restore bison to parts of their historic range. FWP, other agencies, ranchers, and Indian bands are now working to combine these two movements so that brucellosis-free wild bison may once again be part of Montana's natural landscape.

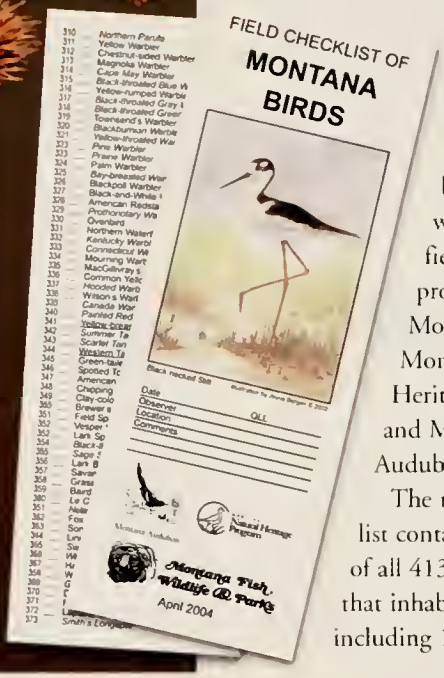
M. Jeff Hagener

GOLDFINCH ©JOHN R. FORD

Free new bird field checklist now available

You see an owl in midday perched atop a conifer in northwestern Montana. After checking your bird book, you figure it's a northern hawk owl, but you're not sure. Do northern hawk owls live in Montana?

Wonder no more. Now you can verify and keep track of all your Montana bird sightings with a free new field checklist produced by Montana FWP, the Montana Natural Heritage Program, and Montana Audubon.



The newly updated list contains the names of all 413 bird species that inhabit Montana, including 12 new species—such as the white-tailed kite, Siberian accentor, and blue-headed vireo—that have been documented here since 1996.

The list is based on the sixth edition of *Montana Bird Distribution*, a book published in 2003 by the National Audubon Society.

To print a copy of the bird checklist, go to the FWP website at fwp.state.mt.us, click on "Wild Things" and then look under "Hot Topics." The checklist is also available from all FWP offices.

You can purchase *Montana Bird Distribution* for $15 from Montana Audubon, P.O. Box 595, Helena, MT, 59624-0595. Interested bird watchers can also visit the Montana Bird Distribution website at http://nhp.nris.state.mt.us/mbd, where they can enter bird observations or query the database.

Do the State Park TWIST

Fun things you never expected to do in Montana state parks

"Shoot" a goat

Lost Creek State Park, near Anaconda, is a great spot to photograph mountain goats and bighorn sheep. Located just 20 minutes off I-15 west of Butte, the park features a 50-foot waterfall surrounded by spectacular limestone cliffs and pink and white granite formations. Wildlife, including goats and sheep, are often seen on the cliffs above the falls. For more information, call (406) 542-5500.

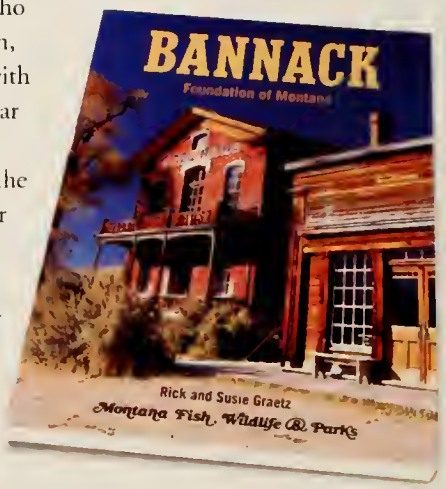
JOHN R. FORD

Bannack, bound

Gold. Highwaymen. Murder. Lynchings. Territorial history. Bannack, Montana's first territorial capital and site of legendary characters and lore, is the subject of a new book published by Montana FWP. *Bannack: Foundation of Montana* was written by Rick and Susie Graetz, whose striking photographs illustrate the book along with historical black-and-white photos. The book presents a compelling history of Montana's premier gold rush mining town, now a ghost town and one of Montana's most popular state parks.

Using excerpts from period newspapers, state documents, and old letters, the Graetzes tell the story of Bannack largely in the words of the people who were there. Mary Edgerton, who arrived in Bannack with her family in 1864, the year of a bitterly cold winter, wrote, "...I was so afraid the children would freeze their ears or noses in the night that [I] got up a number of times...to see that their heads were covered. Their beds would be covered with frost. I saw their frozen breath."

The 64-page softcover book, which sells for $14.95 (plus $4 shipping and handling), is available at Bannack and other FWP offices or by calling FWP at (406) 444-3750.



Kids call Wall Creek Discovery Days "best ever"

The only sad part, says Marc Glines, is when the sixth-graders have to leave. "They know they won't be back here next year for Discovery Days, and some of them actually have tears in their eyes when they have to say goodbye," he says.

Wall Creek Discovery Days is the idea of Glines, an FWP game warden in Ennis, and his wife, Brenda. "It was in 1994," says the warden, "and I was being asked to talk to kids around southwestern Montana about various outdoors topics, and Brenda said, 'You know, you really should do a program right here in Ennis.'"

Ten years later, Discovery Days has grown into one of the largest youth outdoors education events in Montana. The three one-day sessions, held in mid-May at the Wall Creek Game Range, attract more than 200 local grade-schoolers

"The idea is to introduce students to the outdoors," Glines says. "This is a rural area, and kids here should get to learn about wildlife and nature."

The Discovery Days itinerary reads like a brochure from the world's greatest summer camp: fly fishing, archery, rappelling, gold panning, animal track identification, horse packing, fish printing, firefighting, and more. The sessions are presented by FWP staff from throughout Montana, representatives of local sports groups and the U.S. Forest Service, and even past participants.

"This year we had the senior science class from Ennis High School teach a game called Predator-Prey," says Glines. "Many of them had gone to Discovery Days back when they were in grade school, and now they're back, teaching grade-schoolers."

The sessions are age appropriate. Ten-year-olds, for example, learn how to rappel down a cliff and cast a fly rod, while kindergartners try to get into bear-proof containers and use rubber stamps to make different animal tracks.

Several groups of 10 to 15 students rotate through the various activity stations, moving after 30 minutes when Glines sounds a siren.

"You ought to see those tugrats move," he says. "It looks like someone kicked over an anthill."

A day outdoors obviously beats a day in the classroom. But what's in it for Glines and the other instructors, who squeeze Discovery Days into already busy work schedules?

"Some of these kids, as they're climbing up into the bus, will turn to me and say, 'That was the best ever,'" says Glines. "What more could you want than to hear that?"

SCHOOL'S OUT At Discovery Days, grade school students from the Ennis area show off their fish prints and watch with wonder as a bird handler displays raptors common to southwestern Montana.

PHOTOS BY NICOLÉE CASTIGLIONE

Still fishing at 103

A move to Montana from the Midwest in 1930 sparked an interest in fishing for the state's oldest angler.

This spring Gustav "Gus" Blomstrom, 103, purchased his resident fishing license at the Montana FWP regional headquarters in Great Falls. The department's automatic licensing system confirmed he is the oldest angler in the state.

Later Blomstrom and his friend, Dan Hunter, each caught their limit of five rainbow trout from the shore of 1,500-acre Willow Creek Reservoir, located 50 miles west of Great Falls.

"Gus caught a couple of nice ones, about 3 pounds," says Hunter, who, at 73, is considered the junior angler. "He can handle fishing pretty good."

Blomstrom developed his passion for angling after moving to Cut Bank from Michigan in 1930.

"I wasn't a very good fisherman when I got here," says Blomstrom. That soon changed, as he and his wife learned to catch trout during summers fishing in Glacier National Park. Later they focused their fishing on Duck Lake, where they had a cabin (and three fish houses in winter), and other lakes on the Blackfeet Indian Reservation.

MONTANA FWP

Gus Blomstrom: Next stop, the bait shop.

Blomstrom and his wife, Mary, 93, moved to Great Falls in 1994. She doesn't fish anymore, and Gus just goes a few times each year with friends. But he still likes to catch trout, which he says can't resist a nightcrawler-and-marshmallow combination. As you'd expect from someone who has been fishing for so long, Blomstrom recommends patience.

"Some guys will move every 15 minutes," he says. "But we usually stay in one place for a couple of hours."

Huckleberry

Sniffing out Montana's delicious purple gem

By Ellen Horowitz

By July, many western Montana mountain ranges will be crawling with treasure hunters searching for purple gems. Armed with plastic buckets, coffee cans, or other containers, the prospectors comb hillsides from dawn to dusk. In coffee shops and cafes, they speak in hushed tones of finding "gold mines," "mother lodes," or "bonanzas."

All this activity can mean only one thing: Montana's prized wild fruit, the huckleberry, is plentiful and ready to pick.

The Montana huckleberry is closely related to the blueberry, though no self-respecting Montanan would compare the two. Hardcore huckleberry lovers insist their favorite fruit is far superior to the dull, flavorless blueberry, brought under domestication nearly two centuries ago.

Plant taxonomists, however, do not consider flavor among important identifying features. Peter Stickney, curator emeritus at the University of Montana Herbarium, studied huckleberries for years and identified seven species in the Treasure State. Montana huckleberry plants range from 2 inches tall with berries the size of match heads to shrubs up to 6 feet tall with pea-sized and larger berries.

"The huckleberries most people seek are found from northwestern Montana down to the mountains outside of Bozeman," says Stickney. These are the globe huckleberry, (*Vaccinium globulare*) and the big huckleberry (*Vaccinium membranaceum*), two nearly identical species.

Purple-tongued pickers hoping to cache a few gallons of huckleberries in the deep-freeze care less about taxonomy and more about finding productive patches. The bigger and more abundant the berries, the faster the bucket fills.

"Northwestern Montana produces the best huckleberry picking in the state," says plant ecologist Maria Mantis, of Whitefish. "It's tough to find any decent huckleberry picking once you leave the Flathead and Kootenai national forests and the Glacier Park area."

Mantis says other national forests in Montana occasionally produce well, but "it's not like mountain ridge after ridge after ridge with big, fat, juicy huckleberries" common to the moister parts of the state's northwestern region. There, festivals in Trout Creek, Whitefish, and Seeley Lake honor the huckleberry each year.

However, just because the huckleberry is northwestern Montana's most abundant plant doesn't mean a person can just drive anywhere and find good picking. "It's like knowing there's fish in every creek," says Mantis. "The challenge is finding the best fishing holes."

Finding hucks

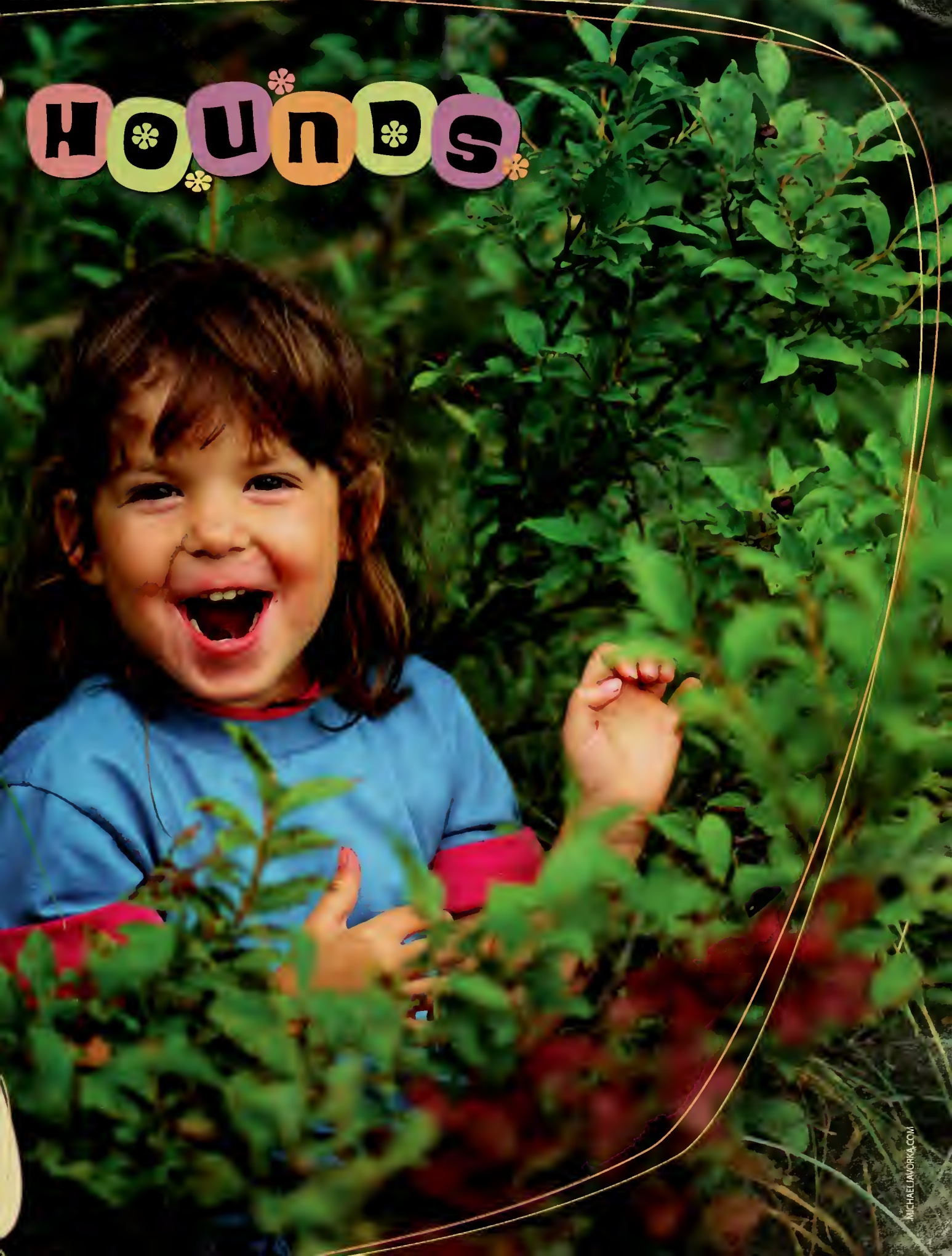
Big and globe huckleberries grow in the mountains at elevations between 3,500 and 7,200 feet. Mantis says to look in forests with roughly 50 percent tree cover—lodgepole pine or mixed forests of lodgepole, larch, spruce, and subalpine fir. Huckleberries grow in 20- to 50-year-old burns, old clear-cuts, ski runs, avalanche chutes, and older, open, high-elevation forests where the plants receive the sunlight they need to thrive.

Like morel mushrooms, hucks grow abundantly in burned areas, but not the year following a fire, as is the case with morels. "Huckleberries come in very slowly after a fire," says Stickney. "It can take 15 to 20 years for the plants to produce prolifically." Likewise, hucks growing in areas opened through logging mature slowly and variably.

Serious huckleberriers, like Jim Riley of Columbia Falls, begin searching weeks before the roadside stands hang their "Fresh Hucks For Sale" signs. By mid-July, he's collecting along sunny, south-facing slopes at lower elevations. As the season progresses, he works his way uphill, searching all sides of the mountains. Some years Riley gathers huckleberries well into September.

Some of the best picking, Riley says, is "where there's heavy brush and it's terribly steep." Here he often has to do what he calls "one-handed picking." That's where the

HUCKS BY THE HANDFUL The best [illegible] in Montana [illegible] in the north [illegible] Flathead and Kootenai [illegible] look for mixed forests of [illegible] pine and spruce and subalpine [illegible] and old clear cuts.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NELSON KENTER

PURPLE REIGN Though a close cousin to the blueberry, the huckleberry (left) is far more delectable, say Montana berriers. Among those heading to the huckleberry hills in late summer are grizzly and black bears (below, left) which gorge on the succulent fruit to build fat for winter hibernation. No less voracious are huckleberry fans who flock to festivals right in Trout Lake, Whitefish, and Seeley Lake each summer. Vendors sell everything from huckleberry ice cream to huckleberry barbecue sauce.

picker has to hang on to the huckleberry bush to prevent tumbling downhill while picking the berries.

Riley says when the berries are abundant and large (⅜ to ½ inch in diameter), he can collect a gallon in about an hour. When it's poor picking and berries are small, however, a single quart per hour may be as good as it gets.

Huckleberries are delicate plants that require adequate sunlight and warmth to fruit abundantly. Depending on elevation and species, huckleberries begin blooming any time between May and July. The small flowers, shaped like Chinese lanterns, vary in color from whitish green to pinkish red. Bees and other insects that pollinate the short-lived blossoms don't have enough time to get the job done during a cool, cloudy spring. These are the years of low huckleberry production.

The plant's finicky nature has made it difficult to tame. Researchers in Idaho, who have been trying for years, now hope to have the first commercial huckleberry plants available in about 2010.

That thought horrifies Ellen Bryson, a huckleberry enthusiast from Helena who can't imagine eating a farm-raised huck. "Nothing will ever replace a wild huckleberry," she insists.

The picking

A few things to know before heading out to harvest huckleberries: One, you don't need a permit to pick hucks in the Flathead National Forest unless you exceed the limit of 10 gallons per person. Other national forests have their own limits, so check first with the particular forest where you plan to pick. Those who sell berries or collect more than their personal limit are considered commercial pickers and must purchase a permit ($4 per day or $80 per season). Considering that huckleberries sell for $30 to $45 per gallon, most commercial pickers can pay for their permit in no time.

Another thing to remember is that people aren't the only creatures working huckleberry patches. Black bears and grizzlies eat them too, so whenever you're picking in bear country, stay alert and make plenty of noise to reduce the chances of surprising a nearby bear.

Once you start picking, you'll notice that huckleberries come in a variety of sizes and colors. Stickney found three color phases to the globe huckleberries: dark red, blue-black or purple-black, and blue-black with a whitish "bloom" or coating similar to that found on plums.

The most likely purple fruit to fool a neophyte berry picker is the serviceberry. Also known as shadeberry and Juneberry, its leaves are rounded and toothed (serrated), and the seeds are large. Serviceberries are edible, but they aren't as scrumptious as hucks.

For many people, picking huckleberries is a tradition as important as Thanksgiving or the elk opener. Bryson heads west to stock up on hucks every summer during the third week of July. "I'm out to get a couple gallons for myself and make desserts and jam to give away," she says.

Her ritual includes baking a pie or crisp to share with friends after returning home from the season's first collecting spree. "We absolutely savor that first huckleberry pie," she says. "It just doesn't get any better than that. I absolutely love it and love to get other people going on it, too."

Bryson finds huckleberries by driving into the mountains with the car windows rolled down. Sometimes she sees the purple globes hanging from bushes. Other times she actually smells the hucks first, pulling over to follow her nose into the hills.

To hold picked berries, Bryson uses a plastic container, tightly lidded. "There's nothing worse than watching berries rolling down the slopes," she says, explaining that pickers can expect to stumble a few times while traversing the rugged terrain where huckleberries grow. Bryson wears her quart-sized huckleberry bucket at waist level on a soft rope necklace like an oversized pendant. A U-shaped flap cut in the lid allows her to place berries in the container without removing the top. The flap readily pops back into position to keep berries corralled while both hands remain free for picking.

Though some hard-core hunters remove

CYNTHIA A. DELANEY

Ellen Horowitz is a freelance writer in Columbia Falls.

berries from the plant with wooden paddles or rakes, Bryson shuns that technique because too many leaves fall into the bucket.

"Besides, there's nothing better than sitting in a good patch of berries and picking them by hand," she says.

Sherry Johns of Kalispell grew up huckleberrying with her parents and has passed what she calls a "family passion" down to her own children. She ignores rumors of good or bad berry years, preferring to hike out to favorite spots to see for herself how the hucks are doing. On weekly treks with friends, Johns carries a 1-cup container in her daypack. If she finds huckleberries, she can bring enough home to make a batch of muffins or pancakes. If the berries are abundant, she'll return later with a 4-quart plastic ice cream bucket for some serious collecting.

"My mother used to fix huckleberry syrup and jam, but I've never done that because it takes too many berries," says Johns. "Having berries in the freezer is like having money in the bank. You don't want to spend it all." Her goal is to harvest a few gallons each summer, enough for pancakes, pies, and muffins to last the year.

PHOTOS BY DEA VOGEL

Though books, guides, and articles can provide basic tips on when and where to find hucks, nothing beats experience. You have to get out there and start searching. The more time you spend afield, the better you get at finding huckleberries.

And that means looking on foot. Bryson tells beginners to stop the car once in a while, get out, and look around. "Many berries hide under leaves, so you can't see them from the road," she says. "Once you learn to recognize a huckleberry bush, you'll start to see berries."

She also encourages beginners to keep at it, because the payoff is worth the wait. "There's nothing better than finding that very first patch," she says. "It's heaven. You'll think you've struck gold."

After the Picking

By Ellen Bryson

Most commercially sold hucks have been cleaned by the vendor, but if you pick them yourself, you'll want to clean them. I put a few cups in a strainer and pick the sticks, leaves, and bugs out by hand. I don't rinse the berries because I can't bear to see the precious juice wash down the drain.

What do you do with the cleaned huckleberries (provided you haven't eaten them all at one sitting)? One option is to freeze them for later use. Hucks must be frozen tightly in a sealed container so the fragrance doesn't permeate everything in your freezer. One way is to freeze the berries in a single layer on a paper towel–covered cookie sheet and then put the frozen berries into a container. Another is to dab the berries gently with a paper towel to remove moisture, put them in a large glass jar or heavy-duty zipper-lock plastic bag, and then freeze. They freeze well this way and are easy to remove later a cup or two at a time.

Try to freeze hucks within a few days of picking. Otherwise they get too juicy, begin to ferment, and freeze into one big huckleberry clump.

I don't wait to thaw huckleberries when baking but simply add them frozen to a pie, cobbler, or pancake recipe. This is one of my favorite recipes, given to me by my picking buddy, Desi Hanson.

BRIAN HAGIWARA

Huckleberry Cobbler

1 box burter recipe yellow cake mix
¾ c. butter
1 c. finely ground pecans
1 c. quick-cooking oatmeal
1 T. cinnamon
1½ c. fresh or frozen huckleberries

Preheat oven to 350°. Mix first five ingredients until crumbly. Put half the mixture in the bottom of a 13- by 9-inch baking pan (sprayed with cooking oil) and pat down. Distribute huckleberries over bottom layer. Sprinkle remaining crumb mixture over the top and pat lightly. Bake 30 minutes or until lightly browned. Serve with whipped cream or ice cream.

A Grizzly Biologist's Journal

For the past 20 years, I have been conducting grizzly bear research and management for Montana Fish, Wildlife & Parks along the Rocky Mountain Front. Since the mid-1970s, when the species was listed as threatened under the Endangered Species Act, the population of Northern Continental Divide Ecosystem grizzly bears has been slowly growing and expanding. Now they are spilling east from the Rockies into their historic low-elevation native prairie habitat, where they were exterminated in the early 1900s. As they reoccupy their traditional range, grizzlies are increasingly coming into conflict with ranchers and others living along the Front. My job as one of FWP's four grizzly bear management biologists is to better understand grizzlies and find ways to reduce those conflicts. These photos, which I've taken over the past two decades, document some aspects of bear-human conflict issues. I hope they help people better understand why these conflicts occur and what ranchers, FWP, and the grizzlies themselves are doing to help people and bears coexist on the landscape.

—Mike Madel, Choteau

Grizzly bears, like this female I photographed at left, are intelligent, mysterious, and captivating creatures. But people haven't always thought so. Grizzlies were hunted, trapped, and poisoned nearly to extinction 100 years ago. By the 1930s, even seeing a track along the Rocky Mountain Front was rare. Over the decades, however, grizzly numbers began to grow. Below left is the Front overlooking Blackleaf Creek, 20 miles northwest of Choteau. It shows the diverse mosaic of habitat where the foothills turn into prairies, with riparian shrubfields and hay meadows. These low-elevation grassland habitats, also seen in the photo of sibling yearling bears below, are where grizzlies lived before white settlement. Now grizzlies have begun to reoccupy these areas, which are often private ranchlands. That's where many conflicts occur.

By Mike Madel

I took the picture at left by crawling into a large den where a massive 465-pound female grizzly and three yearlings had hibernated the previous winter. Above right is biscuitroot, an important plant food dug up by grizzlies in subalpine areas.

As grizzlies expand their home range, they move into areas used by humans. That's where the bears get into trouble, such as by tearing up beehives (left) for honey and larvae. Elsewhere, grizzlies have learned to feed on garbage, birdseed, and pet food left outside, putting them in close contact with people.

Many conflicts are between bears and ranchers along the Rocky Mountain Front. Dusty Crary (left), who raises cattle near Choteau, is a typical Montana rancher learning to deal with grizzlies. His land has some terrific wildlife habitat that naturally attracts grizzlies. Unfortunately, grizzlies occasionally prey on livestock, with young calves being the most vulnerable. Defenders of Wildlife, a national conservation group, has been helping Crary and other ranchers by compensating them for the market value of livestock lost to grizzlies.

Each spring, newborn calves die of natural causes. Their carcasses become bear magnets. We encourage ranchers to remove any dead animals to remote areas of their ranch, away from homes, barns, and corrals. For ranchers who don't have remote areas, we bring in a specially outfitted FWP truck (above left) and redistribute carcasses onto other lands. Another way of reducing conflicts is with aversive conditioning. We use rubber bullets or cracker shells (fired from shotguns), propane-operated scare guns, Karelian bear dogs, and electric fences, like the one above right erected around a sheep bedding ground. These scare tactics help bears learn to avoid human dwellings and areas where livestock frequent.

If removing food attractants doesn't work and aversive conditioning fails, we trap and relocate problem bears. In the photograph above is a female grizzly and her two cubs, which were trapped near beehives they had been damaging. We tranquilized the bears, took tissue and blood samples, attached a radio collar to the mother so we could track her movements, and then relocated them to a remote site. We once thought it was best to take bears as far as possible from where they caused problems. But we found they usually returned. Now we relocate them in a remote portion of their home range, where they are familiar with the territory and can get back into natural feeding patterns. When coupled with preventive measures such as electric fences, this method seems to work. In the photo at left, we are transporting a grizzly to a short-distance relocation site along Dupuyer Creek.

Ranchers, biologists, outfitters, and others who deal with bears are always learning new ways to reduce conflicts between bears and humans. They have to. Grizzlies will continue to expand into more and more areas as they reoccupy historic habitat. The better we can anticipate and prevent bear-human conflicts, the easier it will be for people and grizzlies to coexist.

Wonderground

By Scott McMillion Photography by Craig and Liz Larcom

The marvels of Lewis and Clark Caverns State Park

This is a story shaped by water in all its forms:

tiny drops and rushing torrents and rising vapors, rainstorms that slicken hillsides and droughts that crack them open, gullywashers that uproot trees and ice that can crack a stone. It's about the greatest of floods, and it's about the warm mist of your breath.

At Lewis and Clark Caverns State Park, whether you're underground or above it, the world around you is shaped by water.

Water sculpted the famous caves, drop by patient drop, hauling microscopic bits of stone from one place to another. And it was water, appearing as steam from the ground one cold day, that originally brought white men here.

Tom Williams and Bert Pannell first peered into the caverns on a winter day in 1892. They'd been hunting and saw what looked like a column of smoke rising from a hillside. They labored up the mountain to investigate and learned that it wasn't smoke at all: It was steam, the steady exhalation of living, breathing caves. The warm air was pushed from the mountain's lungs only to become ice in the cold air, transformed into crystals so tiny they floated skyward and evaporated in the sun.

American Indians had seen this "smoke," this breath from a mountain, or at least that's the way the story goes in the farms and towns around the caverns. But nobody knows for certain. If the Blackfeet or Shoshone or anybody else had explored these caverns, they left behind no sign.

Perhaps, like Williams and Pannell, they dropped a stone down the steaming shaft, listened to its echoes, and vowed to come back. It took Williams six years to return to what he called the "hole in the rock," bringing friends and ropes and candles to see just what existed below.

And what a day they must have had. It was 1898, long before movies or color photographs. Perhaps the illustrated magazines of the day had sparked their imagination with renderings of famous caverns in other parts of the world. Maybe they had some notion of stalactites and stalagmites and the way water works with limestone to make stone waterfalls, columns, and wedding cakes. Or maybe they didn't. Maybe everything lit by their sputtering candles was a brand-new vision, a finding as exotic as a mammoth tusk. But surely those who first peered into the caves' depths must have been stupefied by the foreign, unimaginable world before them. Some were likely scared half to death.

And then the American entrepreneurial spirit kicked in. These caves were fascinating. Surely people would pay to see them. But how to attract them to the site?

That's where Dan Morrison came in. A successful prospector, Morrison was a man who knew how to work underground, always on the lookout for a new way to turn a dollar. Williams approached the prosperous miner, led him into the caverns, and asked what he thought. Morrison saw dollar signs reflecting from the glossy surfaces.

He'd made money before in the hills where the great caverns were formed. His lime quarry, along with three nearby gypsum mines, supported the lively community of Lime Spur. Morrison already had some claims in the hills and, figuring the caverns were on public land, filed a claim on that area, too.

Next he went to work improving his new property, building a trail to the caverns, widening a second entrance, and installing 2,000 wooden steps to carry paying customers in and out of the caves. He advertised, and news quickly spread of the beautiful caverns overlooking the Jefferson River.

That's when the Northern Pacific Railroad became interested in the caves. One of the most powerful factions in Montana, the railroad threw its considerable legal and political weight behind its contention that the increasingly famous caverns were its property, not the mining claim of some local impresario.

The debate soon landed in the courts, which ruled in favor of the railroad. What Northern Pacific then did with its newly cleared title and accompanying marvels surprised everyone. In 1908, after years of flexing its legal muscle in the courts to exert its property rights, the railroad gave the caverns to the federal government.

President Theodore Roosevelt, one of the nation's great conservationists and the kind of guy who likely would have enjoyed spelunking the caverns, selected a name for the newly obtained property: Lewis and Clark Caverns. The famous explorers had never actually visited the site, but they had hiked near the caverns on Cave Mountain in 1805 looking for Shoshone Indians, and a portion of their famous route was visible from the caverns' entrance.

The government designated the newly named caverns the nation's 12th national monument—then slapped a lock on a barricade and ordered everybody to stay the heck out.

Morrison ignored the dictate. He broke the first lock and brought in tours. Whenever the government installed a new lock, he broke it, maintaining a condition of perpetual defiance until his death, in 1932, at the age of 80.

Around that time, the federal government was wondering what to do with the caverns. National Park officials knew the site was too fascinating to be locked away, but after a quarter-century they still hadn't figured out a way to open the gates. Meanwhile, Montana was looking for a state park. It had formed a state parks program in 1929 but had yet to acquire a site. The match was obvious.

Before handing the caverns over to Montana, however, the federal government agreed to make improvements. The work began in 1935 with the arrival of the Civ-

Scott McMillion writes for the Bozeman Chronicle *and is the author of two books. Photographers Craig and Liz Larcom live in Great Falls.*

ilian Conservation Corps, a federal public works program that set up camp at LaHood, just a few miles up the Jefferson from the caverns. The industrious CCC crews turned the caverns into what visitors see today. They built roads and a visitor center, widened passages, and chiseled steps into limestone. They laid electric cable to power a new system of lights. And they hauled out tons of bat guano. They also explored the caverns more fully, discovering the remarkable Paradise Room, where they blasted a 538-foot exit tunnel so visitors could make a one-way tour of the caverns and not have to climb the long stairs back to the entrance.

After World War II, the state began its own improvements, such as tearing down Morrison's wooden steps, including a rickety spiral staircase that yawed as much as 2 feet while suspending visitors over a 90-foot drop. A short railroad was built from the visitor's center to the caverns, where tourists then took a tram car up the last several hundred feet of nearly vertical ascent, its clacking and groaning adding to the excitement of seeing the caves.

By the early 1970s, the train and tram were deemed unsafe and removed. Today, all visitors must take a short hike to reach the cave entrance, where the guided tours begin. It's understandable that most people are in a hurry to see the caverns. But it's best not to rush. The walk up a moderately steep path to the cave mouth is a fascinating journey in its own right.

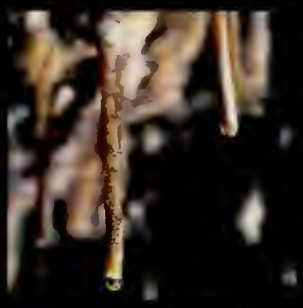
Check out some of the boulders and exposed rock faces for fossilized shellfish, evidence of how this layer of mountain was made. Roughly 330 million years ago, much of Montana lay beneath a shallow sea. Runoff carried dissolved minerals to the sea bottom, where the growing layers of silt would eventually become limestone. Then, pressures from deep within the earth started lifting layers of rock, pushing older rock through the limestone, kneading the surface of the earth like bread dough, leaving cracks and fissures and holes.

Much later, water teamed with gravity and chemistry to eat away the limestone, moving it forever downhill by drops and trickles, patiently undoing the hasty work accomplished by volcanic uplifts hundreds of millions of years before. That process made the caverns and shaped the hillsides

Cave language

Fast-dripping water containing calcite forms stalagmites that rise up in grotesque columns from the floor. A few other speleothems found at the caverns:

Clusterite ("Cave popcorn")

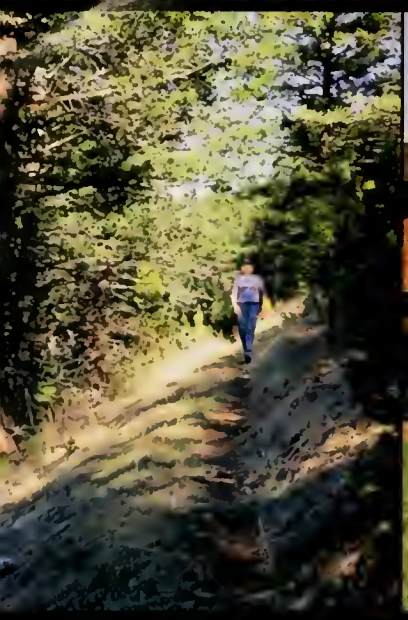


Stalactite ("Soda straws")

Helictite ("Cave worms")

Flowstone ("Draperies")

Dripstone ("Cave bacon")



ABOVEGROUND ATTRACTIONS Visitors also find plenty to do at the park outside the caverns. Eight miles of trails (above) take hikers past scenic vistas, through elk and deer habitat, and across ancient sea floors scattered with fossils.

STAY AWHILE Lewis and Clark Caverns State Park is an ideally located headquarters for those exploring nearby national forests and historic sites. The campground offers 40 sites for tents or trailers, and, for those who prefer to sleep under a real roof, several rental cabins. The park's new pavilion (above) is big enough for weddings, family reunions, or other get-togethers. In recognition of these and other amenities, Lewis and Clark Caverns was named by a national conservation group as one of the nation's top ten "21st Century Heritage Parks."

above them and the river valley below.

You can see all of this and more at the park. Guided cavern tours last about two hours (bring rubber-soled shoes, prepare to stoop, and carry a sweater to insulate yourself from the constanr 50 degree temperature), but the rest of the 3,034-acre park is yours to explore at leisure. More than half is a "primitive" zone, where trails are carved by the hooves of deer, elk, and even an occasional mountain goat. About a third of the park is "semi-primitive," with 8 miles of well-marked, maintained trails that lead through remarkable changes in habitat.

One 3-mile hike starts at the park entrance, beginning in a stretch of thirsty-looking sage and cactus country. Then you climb through patches of Rocky Mountain juniper and mountain mahogany to Douglas fir stands with their welcome shade and the soothing aromas of cool earth and deep forest duff. The trail parallels the road to the caverns, but even on the park's busiest days you'll find spots of absolute quiet, where the only sounds are the crunch of your feet in the soil, the thump of your working heart, and the indignities shouted by a magpie or two.

Notice, as you climb, how everything changes. The vegetation grows greener, the soil turns dark, and the signs of wildlife become more abundant. The trail ends at the park's upper picnic area, a forested glen beside a tiny stream that's handy for eating a midday meal or letting the kids chase water bugs while you take a nap amid the birdsong.

The remainder of the park is the "developed" corridor—paved roads and parking lots, a spacious campground with showers, an amphitheater, even rental cabins. A handsome new pavilion is big enough to accommodate family reunions, weddings, and school groups. Campers and RVers who need them can find full hookups at nearby Cardwell or Three Forks, which also provide groceries and other supplies. The park contains a stretch of the Jefferson River, a magnet for canoeists and anglers. Boaters wanting to float several stretches of the Jefferson will find the park's campground ideally located as a headquarters, as will people exploring nearby forests and historic sites.

Hiking, wildlife watching, boating, camping—Lewis and Clark Caverns State Park offers a wide range of outdoor activities. But its showpiece remains the caverns, with the vibrant ribbons, the cave popcorn, the towers and columns, the icicles and pedestals and comic book characters—all made of stone, most still growing, a world shaped by water, one patient drop at a time.

Many improvements at Lewis and Clark Caverns and other state parks have been funded in part by the federal Land and Water Conservation Fund (LWCF). In 2002 a conservation group, Americans for Our Heritage and Recreation, chose Lewis and Clark Caverns as one of the nation's top ten "21st Century Heritage Parks" from among 39,000 LWCF projects nationwide. For more information on Lewis and Clark Caverns State Park, call (406) 287-3541 or visit the FWP website at fwp.state.mt.us.

The Big Ones That Didn't Get Away

By Jim Vashro

Most red-blooded anglers dream of catching the "big one." You know, the fish as long as your leg, 6 inches between the eyes, the snapshot alone weighs half a pound. Catching this lunker earns you instant fame in some circles and gets your picture on the wall at the local sport shop. With luck, it could even be a state record or, dream of dreams, qualify for the national Freshwater Fishing Hall of Fame or International Game Fish Association record books. For most mortals, however, an encounter with such a huge fish is a chance meeting crossed with disaster, leaving the angler with a snapped line and a broken heart.

Some hard-core trophy fish hunters leave little to chance. They use top-notch equipment, keep updated copies of record books on hand, and consult moon charts, barometers, and Ouija boards before each trip. This results in a 14-inch walleye or 12-inch trout.

Then there's the kid with a Snoopy rod or the beginner using a Zebco 303 who lands a whopper. "Had a piece of hotdog on for bait and sort of dozed off," he tells the reporter. "When I woke up there was this big fish on the line." It's the kind of story that makes dedicated anglers wail and gnash their teeth.

I'm such an angler, fascinated by big fish and willing to work diligently to get one to bite my lure, though with little success. However, while managing fish in northwestern Montana over the past 20 years, I've heard many stories of neophytes catching massive fish, people eating fish trophies, and potential state records gone amiss. Those of you who work so hard to catch a lunker, prepare to wail and gnash:

A visitor from Wyoming a few years back caught a 44.5-inch lake trout on Flathead Lake that pulled a pocket spring scale (uncertified) to 43 pounds, which was 1 pound over the existing state record. He continued to fish, then had trouble later finding a certified scale, which is necessary to document a record. During the six hours that elapsed before he got it officially weighed, the fish dehydrated and lost several pounds, dropping to just 40.3 pounds. (Lesson: If you catch a potential record-breaker, stop fishing, keep the fish wet, and get to a certified scale as soon as possible.)

ILLUSTRATION BY JEFF TOLBERT

Jim Vashro is the FWP regional fisheries manager in Kalispell.

Unlike those of us who envision fame and glory accompanying a record catch, many people simply view a huge fish as a huge meal. I once got a call from an angler who wanted to know if lake trout in Flathead Lake were safe to eat. I explained there were some size-related consumption advisories and asked how big the fish was. "Oh, 46 inches," she said. I gulped. The fish was 2 inches over the existing record. I asked her how much it weighed. "Oh, I don't know," she replied. "It was already cut up and on the barbecue when we thought about checking."

I once got a call from a local fellow who told me his kids had seen a northern pike that looked like an alligator swimming in their favorite perch pond. Casting from a 12-foot rowboat, the kids managed to hook the pike, and an epic battle ensued. While trying to haul the fish toward the boat, they accidentally kicked the plug out. As the craft began to sink, one kid held the rod while the other frantically rowed to shore where they were finally able to land the fish.

"That's a great story," I said. "By the way, how big was the pike?"

"Oh, 49 inches."

That was longer than the existing state record!

"How much did it weigh?" I choked out.

"Oh, I don't know. We just chunked it up. Got a couple of meals out of it. Kinda boney, though."

Sob!

Many bass anglers are known for their catch-and-release ethic, but not all. The existing state largemouth bass record is a 22-inch, 8.29-pound lunker. The big bass languished in a freezer for a year until someone told the angler he really should have it officially weighed.

Then there was the time in June when an FWP game warden was checking anglers on Echo Lake, near Bigfork. He pulled up to a boat and asked how the fishing was. "Great," said the angler. "Got two bass for dinner." Now, the limit at that time of year is one bass per day, and it has to be over 22 inches long (this protects spawning-aged fish while allowing someone who catches a potential record to keep it.) The warden asked to see the fish, measured the first one at 19 inches, and dropped it overboard. "What are you doing?" the angler cried. "That's my dinner!" The warden explained the limit and said the man would get a ticket if the fish didn't swim away (it did). The warden then asked to see the other bass, and the man pulled from his livewell a monster measuring 24 inches. "Is it legal?" he asked anxiously. "It is," the warden assured him, "but this could be a new state record." He waved at all the bass boats nearby and said, "These guys will probably buy you the best steak dinner in town if you'd turn this fish loose." The angler replied, "Nope. I had my heart set on bass for dinner," and headed to shore.

YOU'LL NEVER BELIEVE WHAT I SAW!

MONTANA'S WEIRDEST FISH AND WILDLIFE SIGHTINGS

BY ANDREW MCKEAN
ILLUSTRATIONS BY PETER GROSSHAUSER

Lima Reservoir, a remote impoundment in Montana's far southwestern corner, is an unlikely place to see a visiting celebrity. But on its glassy surface in 1998, Bill Schenk spotted Pink Floyd.

Not the psychedelic British rock band, but rather a Chilean flamingo. The leggy South American native apparently had escaped from a Utah aviary and was observed frequently enough in the Salt Lake City area through the 1990s to earn the colorful monicker. Schenk, a Montana Fish, Wildlife & Parks biologist in Helena, was helping a friend monitor sage grouse in the southwestern valley that contains the reservoir when he spotted the flamingo.

"Our first glance at the open water revealed an assortment of ducks and Canada geese," says Schenk. "Then we saw this bright pink bird. At first I thought it was a joke, a lawn ornament floating on the water. Then it swam around and flapped its wings."

Schenk's sighting solved a mystery. Originally brought to Utah from its native range in Florida or farther south, the liberated Pink Floyd spent winters on Utah's Great Salt Lake, where he waded shallow flats and ate enough brine shrimp to maintain his bright pink plumage. But no one knew where he went in summer. After quizzing other southwestern Montana birders, Schenk learned the flamingo had also been spotted at Clark Canyon Reservoir and the Red Rock Lakes National Wildlife Refuge, consorting with tundra swans and geese (and probably pining for a mate).

Pink Floyd is just one of many oddball animal sightings that occur regularly in Montana. Others include large mammals searching for new places to live, foreign migrating birds veering far off course, all types of albino critters, strange hitchhikers that appear from southern states, and animals intentionally imported to or transplanted within Montana.

Montana contains a wide variety of native animals—from picas to porcupines—because Montana contains so many different types of habitats, including alpine peaks, mountain streams, farmlands, and prairie potholes. Montanans expect to see a variety of wildlife. But when an animal appears outside its usual habitat, that's when people really sit up and take notice—and when the telephones at FWP and newspaper offices start ringing.

Pink Floyd's Montana appearance was hard to miss, but the bull moose that loitered around Nelson Reservoir in northeastern Montana a few years ago was cleverly disguised. During a scorching hot day in 1999, FWP technicians surveying fish in the Phillips County impoundment noticed a black stump poking from the water. At first they attributed it to the low water level, but because Nelson is a flooded prairie, not forest, a stump under the surface seemed unusual. So the crew boated closer. The "stump" turned out to be a young bull moose, completely submerged except for his head, probably to stay cool and keep the area's notorious mosquitoes from sucking him dry.

The moose stayed around Nelson for a week, then moved on. His presence caused a momentary stir. Though moose are considered woodland creatures, they periodically roam from their preferred habitat, and every couple of years eastern Montana coffee shops are abuzz with reports of a moose on the prairie, looking as out of place there as a steamship.

Yet flatland moose are not as far off course as many people might think. "Much of north-central Montana is prairie between islands of moose habitat," says Al Rosgaard, FWP wildlife biologist in Havre. "Moose are found north of us in the Cypress Hills of eastern Alberta and southwestern Saskatchewan, and south of us in the small mountain ranges between Great Falls and Lewistown."

Rosgaard explains that yearling moose are pushed out of their mother's home range. If they can't find vacant habitat in the woods, they often follow streamside corridors such as the Milk River and Frenchman Creek looking for unoccupied living places. Sometimes the straying youngsters end up in highly visible areas such as Nelson Reservoir.

Or Medicine Lake. This prairie pothole in extreme northeastern Montana has had its share of unlikely visitors. People have reported seeing woodland species such as moose, black bears, wolverines, and even caribou in the open, treeless prairie near the Medicine Lake National Wildlife Refuge.

Often, strange wildlife sightings aren't hard to miss. Dave Yerk certainly noticed the tan-and-white forms bobbing along the surface of Holter Lake, where he worked as an FWP fisheries biologist. They were antelope, swimming across the reservoir. Yerk, now stationed in Choteau, also once spotted a mountain goat paddling across Canyon Ferry Reservoir.

Other white animals seen around the state are true oddities. Rare albino animals have a complete lack of pigment, including in the iris (accounting for the pink eyes). Crows, squirrels, white-tailed deer, and raccoons are among the species most prone to albinism. More common are "partially albinistic" animals, which have some white coloration mixed with normal pigmentation. The most well-

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Andrew McKean is an FWP information officer in Glasgow. Illustrator Peter Grosshauser lives in Flagstaff, Arizona.

known examples are the piebald (or spotted) deer reported every few years. An even rarer color aberration is all-black. It shows up in some squirrels and other critters that have overactive pigment cells.

Indigenous animals naturally wandering into new surroundings are curiosities but rarely biological problems. That's not true for the many exotic animals that people move into new habitats. Wildlife and fisheries professionals say exotic creatures are becoming more than just oddities and are actually taking root and even displacing natives.

Piranha-like pacu have turned up in Foys Lake west of Kalispell and Lake Elmo in Billings. The hand-sized fish, native to the Amazon Basin, likely arrived in Montana through the tropical fish trade.

"Somebody probably raised the pacu in an aquatium and got tired of them," says Jim Vashro, FWP regional fisheries manager in Kalispell. "Instead of killing the fish or flushing them down the toilet, they turned them loose in the neighborhood pond."

Vashro, who maintains a database of illegal fish introductions across Montana, has logged 440 separate introductions, ranging from an oscar (another tropical fish) in Lake Josephine near Billings to channel catfish in Kalispell's Woodland Park Pond. And in Little Bitterroot Lake, west of Kalispell, someone actually found a starfish.

Illegal introductions aren't as frequent with terrestrial animals, thanks to a rigorous new system requiring anyone who wants to import exotic wildlife into Montana to apply for a permit. Previously, however, nearly any animal could be brought into the state, as game warden Mark Earnhardt found out in 1991 outside Havre.

"We got calls from some folks that a black mountain lion had been killing pet peacocks," says Earnhardt, now based in Helena. "I followed leads to an abandoned trailer house outside town and shined my flashlight under some outbuildings. Staring back at me was a big black cat, about 3 feet long." It turned out to be a black leopard being kept as a pet. "When the owner arrived, he crawled under the trailer, grabbed the leopard by the tail, and carried it off," says Earnhardt, who never learned where the cat's peacock snacks came from.

Some wildlife take advantage of human development to expand their range into strange places. That's likely the case with the dead opossum found near railroad tracks in Decker, the coal-mining community of southeastern Montana. Highly omnivorous and nocturnal, opossums aren't native to Montana, where harsh winters limit their survival.

"We suspect it hitched a ride on a coal train from points farther east and south," says Jack Austin, FWP warden sergeant in Miles City. "Apparently it was hit by a car or a train at a railroad crossing."

Because mammals typically walk to new habitat, their distribution is limited largely by landscapes. That's not the case with birds, however, which can have a far more expansive distribution. This past winter, the birding world was abuzz with reports of a Siberian accentor spotted near Gardiner. Birders from 27 states descended on Paradise Valley to catch a glimpse of the rare warblerlike bird, which had strayed from northern Asia.

Sometimes an unusual bird is detected only after being killed. That was the case with an ancient murrelet downed by waterfowl hunters on the Missouri River. "My hunting companion mistook it for a hen bufflehead," says John Little, FWP regional parks manager in Miles City. "That's what I thought it was, too, until I saw it had a beak instead of a bill."

Related to the puffin, the ancient murrelet is an ocean bird more commonly found on the North Pacific than on inland rivers.

Some exotic animals, such as ring-necked pheasants and yellow perch, were intentionally imported into Montana and are actively managed for recreational opportunities. Others, such as starlings and carp, are unwelcome visitors so imbedded in the state that eradicating them would be impossible.

Gray wolves and grizzly bears are native to much of Montana, but human activity has pushed them into small, remote enclaves. Recovery plans encourage these species to reoccupy some of their historic range. If that happens, you can expect to hear about more unexpected sightings in nontraditional habitats. That's certainly been the case with elk, historically more common in Montana prairies than the mountains. They now seem to be spreading back to their native grasslands.

If you see an animal you suspect is out of place, pick up a nature guide and study animal descriptions and distributions. There's a good chance the animal actually belongs there. If not, note its location and any distinguishing marks or colorations, take a photograph if possible, and report the sighting to an FWP office.

Sometimes a strange sighting indicates gradual and potentially significant habitat changes, says FWP's Steve Carson, who is compiling a database of unusual wildlife sightings around the state. The presence of warm-weather species such as opossums, flamingos, or even tarantulas could indicate that Montana's climate is becoming warmer and drier.

Other times, the appearance of an unusual critter is simply an innocuous footnote to a person's day, an indication that we live in a world where nature's rules are elastic and wildlife can be far more mobile than we ever thought possible.

Raptor enrapture

The joys of watching birds of prey

GOLDEN EAGLE BY W. STEVE SHERMAN

GOLDEN EAGLE BY BARBARA THOMAS

By Becky Lomax

Along Blowout Mountain, a black dot soars. Through binoculars, I squint to find a bit of color that would help me identify the bird, but from this distance, it's impossible. Beside me in the blind, a researcher glances for a few seconds at the distant speck. "It's a goshawk," he announces casually. While I strain to see markings to indicate the species, the northern goshawk rides gusts along the Rocky Mountain Front ridgelines in our direction.

Raptors travel along the Front on their annual migratory patterns, trekking north to breeding grounds early each spring and south to wintering ranges in early autumn. During these seasonal pilgrimages, many birds of prey fly near Rogers Pass, along the Continental Divide about halfway between Helena and Great Falls. It's a remote area of rugged terrain and relentless wind, where broad grasslands are interspersed with stunted lodgepole pine and gnarled subalpine fir thickets.

From September through mid-November, Rob Domenech spends long days in this weather-beaten terrain counting, capturing, and banding raptors. Founder of the Raptor View Research Institute in Missoula, Domenech today is working with the California-based Wildlife Research Institute, Inc., which sponsors migratory eagle studies in California, Montana, and New Mexico. To track raptor migrations, populations, and survival, he leads a team of researchers and volunteers who lure raptors to net traps for banding. (When the banded birds eventually die, people who find the carcasses are urged to report the band number to a national bird banding laboratory, which uses the information to monitor populations.)

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BECKY LOMAX

MONTANA OUTDOORS

BACK TO THE FRONT Raptors migrate along the Rocky Mountain Front, concentrating temporarily at Rogers Pass, a chink in the mountains. At birding blinds (left), researchers search for visible clues to identify what often appear as nothing more than dark spots in the sky. Along with one of the continent's highest concentrations of golden eagles, the pass attracts falcons like the American kestrel (above), accipiters, and buteos such as the ferruginous hawk (right).

Rogers Pass is one of the nation's top raptor viewing and capturing sites, especially for golden eagles. "In one season, we've banded more golden eagles than all banding stations in North America combined," says Domenech. Hawks, falcons, and bald eagles also migrate along this flyway. During the fall 2003 banding season, nearly 1,900 raptors crossed Domenech's study site, with a single-day high of nearly 200 birds. On an average day during the fall migration, 41 raptors fly over Rogers Pass. Sharp-shinned, red-tailed, and rough-legged hawks comprise 25 percent of the migrants. Other visitors include Cooper's hawks, northern goshawks, kestrels, and northern harriers.

What attracts birds of prey to this remote site? Westerly winds and strong thermals drive the raptors along the Rocky Mountain Front toward Rogers Pass. With ground squirrels, mice, and jackrabbits (favored by golden eagles) romping through plush grasslands abutting the Front, the birds have plenty of opportunities to refuel along their trek. The raptors follow lengthy migration routes along the Front from as far north as the Arctic Circle all the way to South America.

As my husband and I near the banding site, we alert Domenech of our approach via a small two-way radio. It's all very secretive, as a volunteer assistant leads us on a faint trail through a tangle of subalpine fir. The hidden route, she explains, veers away from open fields where we might disturb incoming raptors. I knew our presence might startle a nearby bird, but I didn't expect it to affect an eagle's flight path nearly 2 miles away. I later learn from Domenech that these birds have eyesight more exceptional than I ever imagined.

Once at the site, we enter the viewing blind—a 4- by 8-foot plywood box covered with fir trees—and begin looking for raptors. To my untrained eye, one flying bird looks like another, a brown spot evolving into flapping color as it nears. Domenech assures me my difficulty in identifying raptors is not an eyesight defect but a matter of not seeing shape and flight patterns.

I grab a silhouette diagram of raptors in flight to help me identify incoming birds. Body, wing, and tail shapes are the easiest ways to identify flying raptors, Domenech explains. Falcons have pointed wings and tails used for spectacular swoops and wing-tucking dives. Broad-winged hawks (buteos), such as the red-tailed, rough-legged, and ferruginous, have long, broad wings and tails for gliding and kiting. Accipiters, like the northern goshawk, Cooper's, and sharp-shinned, are woodland hawks with narrow, falconlike tails and short wings that allow them to maneuver through trees. Much larger than the other raptors are the bald and golden eagles.

As the day progresses, I learn to distinguish flight patterns. Because goldens migrate up to 200 miles in one day using updrafts, their flight patterns become obvious: long, gliding rides alternating with big, lumbering flaps across peak tops. With 7-foot wingspans, the birds are unable to negotiate low flights through trees. When we see a raptor pop up out of thick vegetation, it's usually an accipiter. And quick, short flaps are the sign of an incoming red-tailed hawk. We can tell golden eagles from immature bald eagles by wing shape and

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movement: A golden's dihedrally (shallow V) shaped wings flap less often than the bald's flatter, wider wings.

As a golden eagle glides directly toward us, even I am able to recognize its telltale faded coloration, brown with light patches around the neck nape and subtle tail banding. On a high pole above the treetops, Domenech has placed a horned owl decoy. It is intended to lure eagles, which, drawing nearer, see the moving bait in the banding trap below. When they land to check out the flapping, tethered pigeon, a 4-foot diameter net on a spring system snaps over the raptors. To see the approaching eagle better at this close range, I lower my binoculars. The bird abruptly changes course, its eye detecting my tiny movement through the 2-inch slit in the blind. The researchers in the blind sigh.

In addition to movement, bright colors alert raptors to the presence of humans. As I look at the researchers, their muted browns, greens, blues, and grays match environmental hues, a cue for dress codes when birding. No wonder someone shoved my husband's vivid red pack deep under low tree branches.

Gaudy hues aren't the only things that bother raptors. Most don't like it when people get too close. Goldens, for example, are highly intolerant of humans. "You can almost picnic beneath an osprey, and the osprey won't care," Domenech tells me, "but golden eagles will leave if they suspect human presence." To avoid stressing raptors, viewers should use a spotting scope or binoculars and view from a distance. "You know you are too close if a bird vocalizes," Domenech adds.

In September, during fall migration, a few goldens trickle over Rogers Pass each day. At the same time, red-tailed hawk migrants arrive along with sharp-shinned and Cooper's hawks. American kestrels also join the early-season fliers. As goldens reach high numbers in the third week of October, rough-legged hawks, whose treks start high in the northern Arctic, also peak.

On warm fall days, birds may sense no reason to move south, as prey is often active then. Mild weather usually brings good hunting, says Domenech, so sightings are rarer then. But on rough-weather days, when cool air masses push south into Montana, the raptors start migrating again. Though howling winds and frosty conditions make it tough on the raptor watchers, the price of a few shivers is usually worth the high number of raptors seen.

GARY LEPPART

Rogers Pass is next to one of 46 statewide routes that FWP biologists follow each spring during their annual raptor survey. One of the nation's longest-running raptor studies, the 28-year-old survey shows trends in different raptor populations. "During that period, we've generally observed raptor numbers increasing," says Ryan Rauscher, FWP nongame wildlife biologist in Glasgow, who coordinates the survey.

In late spring, most raptors settle into breeding areas. Look for them in treetops or cliff nests, but be careful not to venture too near. "Raptors laying eggs are very susceptible to disturbance," says Rauscher. "As a rule of thumb, a quarter-mile is plenty close." In midsummer, look for fledglings in the nest and increased hunting activity by adults before the migration's onset.

To see birds of prey in the Rogers Pass area, follow U.S. Highway 287 north from Wolf Creek. The next 21 miles run along the FWP survey route. At Bowman's Corner, turn west onto Montana Highway 200 toward Rogers Pass. A few miles past the Stearns-Augusta road crossing, a marked pullout on the road's north side denotes the Rocky Mountain Front Eagle Migration Area with an "Eagle Watch" sign. You can monitor migrating raptors with scopes and binoculars there and at any unmarked pullouts between there and Rogers Pass.

Though the spring migration in March and April provides great raptor watching, deep snows make it tough to reach higher elevations, restricting viewers to lower roadside pullouts. In early fall you can watch from the pullouts or hike the Continental Divide Trail north or south from Rogers Pass. If you plan on walking off-road in the Rogers Pass area, don't bother or disrupt researchers trapping and banding raptors. Walk discreetly and quietly and move through the trees rather than out in the open, where raptors can spot you from far away.

Late in the afternoon, after viewing dozens of raptors overhead, we watch as Domenech traps and bands a northern harrier. This hawklike bird, with its telltale white rump patch, is usually seen cruising just a few feet over grasslands and dry marshes searching for voles. The harrier turns its comical, owl-like face toward us before a volunteer releases the bird into the sky under the setting sun's tawny glow. Our eyes follow the raptor as it climbs a thermal high above the Continental Divide, disappearing on its southerly journey.

Where have all the Plovers Gone?

Looking for mountain shorebirds where there are no mountains or shores

By EMILY WORTMAN-WUNDER

It's only 7:30 a.m. and the temperature is already 81 degrees as ecologist Mike Wunder and I coast to a stop in his pickup beside a vast stretch of mixed pasture and wheat fields near Judith Gap in central Montana. Grasshoppers click in the weeds below the door as I focus my binoculars on the ragged pastures beside us, searching patches of bare ground for mountain plovers. A bird startles up near a fence, but I ignore it, having learned that a bird calling attention to itself isn't a mountain plover. Instead, I continue to scan the scant, ankle-tall grass for faint flickers of movement. Just as I've decided the field is empty, Wunder says, "We've got plover."

I feel a charge of excitement at the chance to see this elusive bird. I'm here today to help Wunder gather data for his doctoral study at Colorado State University on the migration and continental distribution patterns of the mountain plover. And also to see for myself a little of what all the fuss is about. In September 2003, the U.S. Fish and Wildlife Service decided against listing the mountain plover as a federally threatened species. That has angered environmentalists, who maintain that the birds are apparently and mysteriously declining. "The mountain plover is rapidly declining and desperately in need of federal protection under the Endangered Species Act," says Dr. Nicole Rosmarino, endangered species coordinator for Forest Guardians, a group fighting for federal listing. Mountain plains ranchers, on the other hand, breathed a sigh of relief when the decision was announced.

Mountain plovers were once abundant in the Great Plains, but no longer. Early explorers and settlers reported seeing the bird in most of what is now Montana, wherever the land had wide-open prairie. Now the species is scattered across its former range, often existing in pockets of 10 to 20 birds, although some large populations of up to a few hundred birds exist. The mountain plover is a sensitive species in the Great Plains ecosystem, an important indicator of the shortgrass prairie's overall health.

Because much of the plover's range is now farms or ranchland, it would seem that the rarely seen bird would spark a typical rancher versus environmentalist conflict: people trying to make a living from the land pitted against those wishing to preserve it in a pristine condition. But that's not quite the case with mountain plovers, which have adapted to a disturbed prairie environment and may actually thrive on land altered by certain types of grazing and cultivation.

This is only one of several contradictory traits of a bird the *Sibley Guide to Birds* calls "distinctively plain." Another is that the mountain plover lives nowhere near mountains. And then there's the fact that it's a shorebird, yet it avoids the lakes and rivers where most shorebirds reside. The best place to see a mountain plover is on overgrazed pastures and fallow fields.

There's considerable debate over how mountain plovers are faring. According to some estimates, their numbers have declined drastically in the past three decades. According to others, numbers have risen slightly in recent years (though these increases may be due to greater attention from trained observers such as Wunder).

One of the biggest challenges to determining whether mountain plover populations are going up or down is seeing the camouflaged birds. I wipe sweat from the rim of my binoculars and ask Wunder where the plover is.

"Over by that big lump of dirt," he says, gesturing vaguely.

Once I've found the right dirt lump, all I can see beside it are a few pale rocks. Then one rock moves slightly. The

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plover is maybe two shades lighter than the nearby dirt, and it's nervous. It eyes the truck then lifts its tail, scuttling along the ground, neck outstretched. Then it stops, midstride, and stands upright, looking like a miniature bowling pin.

"It's got a nest," Wunder explains. "Right between that cow pie and that dead weed." He reaches behind him for a homemade chicken wire trap about the size and shape of a bread box and, without taking his eyes off the nest site, slides out of the truck.

He places the trap, which contains a plover-sized hole, over the nest. When the bird returns, it will enter the trap. So strong is the bird's loyalty to its nest that it won't leave unless chased.

Meanwhile, I look around at the vegetation: short, bitten, and trampled almost to the ground, with large bare patches. Most of the plants are noxious weeds, like tumbleweed and Russian thistle. According to the Bureau of Land Management's (BLM) upland rangeland health standards, the forage should be taller, denser, and with fewer patches of bare and eroded soil. If it were, however, Wunder says he wouldn't even bother looking for plovers here.

Dr. Fritz Knopf is a research scientist with the U.S. Geological Survey who has studied mountain plovers for almost two decades. He speculates that one reason for the plover's apparent decline is that the Great Plains states have been managing much of their shortgrass prairie for a mid-sized grass that plovers don't use. What plovers need, he suspects, is grazing that takes grass nearly down to the dirt. Knopf's theory is contested by other scientists, who maintain such agricultural practices harm mountain plover habitat, not improve it.

The fact is, nobody knows why or even if plover numbers are declining and, if they are, at what rate. Even healthy populations can fluctuate wildly in number from one year to the next.

According to John Grensten, wildlife biologist at the BLM field office in Malta, these fluctuating numbers are one reason he and other Montana biologists have been studying mountain plovers since the late 1970s. He has collaborated with Knopf and Steve Dinsmore, of Mississippi State University, who has conducted extensive studies on the mysterious birds.

"What Dinsmore's research has done," Grensten explains, "is to give us a baseline for understanding the species. It takes five to six years of work to really start seeing what's going on. For example, his data have shown us that, given enough properly managed habitat, plover populations seem to be fairly stable over time."

Despite this research, important puzzles still remain. For example: Where do plovers go when they leave their breeding grounds? Do they continue to associate only with the birds they grew up with, or do they congregate on wintering grounds with birds from throughout the West? And what part of the global population breeds in Montana?

Wunder is hoping to answer these questions. As we drive to a nearby ridge to give the parent plover a chance to return to its nest, he tells me more about this particular bird, part of a population he has been studying for the past two years. These plovers are scattered throughout the private rangeland and cropland in Montana's Big Snowy, Little Belt, and Crazy mountains. One hundred miles northeast of here is the continent's fourth-largest breeding mountain plover population, located in southern Phillips and Blaine counties. That's where plover habitat is most like the bare, disturbed ground—prairie dog towns where bison herds concentrated—that early pioneers encountered. Though now the bison are gone and the prairie dogs less abundant, mountain plovers appear to have adapted to breeding on rangeland and cultivated fields.

Of the 300 birds Wunder and others have banded on the plover's wintering grounds in southeastern California's Imperial Valley, 20 have been recovered on breeding grounds throughout the Rocky Mountains. That nearly 7 percent recovery rate, high for banded birds, shows the limited range and habits of mountain plovers. Birds from across the Rocky Mountains return each year to the same sugar beet and Bermuda grass fields in California.

Though it's heartening to know mountain plovers can be so faithful to the land, their annual winter concentration makes them vulnerable to changes in land-use patterns and localized use of environmental contaminants.

EMILY WORTMAN-WUNDER

BARRENS BIRD Graduate student Mike Wunder holds a mountain plover captured for banding in central Montana. Some scientists believe the uncommon bird thrives in heavily grazed rangeland, such as that shown here.

After roughly 15 minutes, the plover returns to its nest and enters the cage. We leave the truck and cautiously approach. Not until we stand looking down on the nest, a scratch in the bare dirt, can we see the three greenish, black-speckled eggs that blend in with the ground.

Wunder snakes a practiced hand in through the cage door and gently picks up the bird, which we take back to the truck to measure and band. Up close, the mountain plover is quite handsome, with a pale beige body and a coffee-colored stripe across its eyes. After weighing the pigeon-sized bird, Wunder pinches a metal numbered band over its leg. Throughout the process the plover doesn't flinch but just looks up through the windshield at the brilliant sky.

Is this bird part of a declining plover population? Some people argue yes, and that the bird should be listed under the federal Endangered Species Act. Others say no, that it's part of a stable population, which, while not as abundant as it once was, is doing fine.

It doesn't seem possible such controversy could involve the plover we've banded today. This dapper little bird knows nothing of growing or shrinking populations. All it wants is to return to its nest, which is what Wunder allows it to do. Released unharmed, the plover flies off, a quick flutter of pale brown vanishing back into the prairie.

Emily Wortman-Wunder is a freelance writer in Fort Collins, Colorado.

The Swift Fox's Speedy Return

Why, after being declared locally extinct in 1969, has this tiny canine returned to Montana?

by Tom Dickson

In 1996 Amy Zimmerman, a graduate student at Montana State University, documented what biologists had previously thought highly unlikely: a resident population of swift foxes in Montana.

Zimmerman saw her first swift fox one summer afternoon as she and her assistant drove toward a live-trap set on a vast, flat shortgrass prairie near the Montana–Canada border, 25 miles northeast of Havre. As the pickup neared the trap site, the research biologist could see a small, tawny canine moving nervously inside the cage. This was no skunk, which was what she had been catching during the previous six weeks.

"It's a swift fox! It's a swift fox!" she shouted to her assistant before climbing down from the truck for a closer look at an animal that Montana had officially declared extirpared (locally extinct) in 1969.

Thrilled to have captured such an elusive animal, Zimmerman quickly sedated the fox, took its measurements, then attached a radio collar before releasing it back into the wild. Over the next two years, she would trap and radio-collar more than a dozen of the prairie canines, eventually discovering three dens containing a total of 15 pups. Her findings documented the return of a species that had disappeared from Montana, and it sparked efforts to expand the fox's range and population within the state.

"The most beautiful fox that I ever beheld," is how Meriwether Lewis described the swift fox in 1806. Often exhibiting a light orange hue, the animal was called "yellow fox" by pioneers, who marveled at the animal's inquisitive nature. Named for its lightning speed, which can reach nearly 40 miles an hour in a sprint, the swift fox is the smallest canine in North America, weighing just 5 pounds, about half that of a red fox, and standing roughly 12 inches tall.

Closely related to the kit fox, a desert species, the swift fox has large ears, which help it dissipate heat in an environment where daytime summer temperatures can reach 110 degrees. Mostly nocturnal, the swift fox uses its large eyes to see in the dark as it travels through the abandoned prairie dog and badger holes it claims for its den. There it can escape coyotes, eagles, and other predators. Swift foxes pose no threat to farmers or ranchers. In fact, they eat rodents such as mice and ground squirrels considered pests by landowners.

A SWIFT DEMISE

Swift foxes were once as much a part of North America's Great Plains landscape as bison, pronghorn, and prairie dog towns. Early pioneers found them throughout the short- and mid-grass prairies from New Mexico north to Saskatchewan. Late 19th-century fur records from forts on the upper Missouri River show that most of the fox pelts turned in by trappers were swift foxes. Not only were the foxes abundant, but the curious canines were easily lured to bait. That gullibility proved part of the species' undoing. In the early 1900s, populations began to decline, especially in the northern part of its range, due to indiscriminate wolf and coyote trapping and poisoning, which inadvertently killed swift foxes by the thousands. Another factor, says FWP furbearer specialist Brian Giddings, was the loss of large prairie ungulates.

"After wolves killed bison and elk, swift foxes would scavenge the carcasses," he says.

Other reasons the species began to disappear include habitat loss (prairies plowed up and planted to crops), poisoning of prairie dogs, ground squirrels, and voles (all swift fox prey), and competition with coyotes and red foxes (whose numbers have increased in the plains with the disappearance of wolves).

By the mid-1900s, the swift fox appeared to have disappeared from Montana altogether. In 1969, the state declared the species extirpated, noting that the last documented record was a specimen captured along the eastern border of Glacier National Park in 1918. Canada declared the swift fox extirpated in 1978. In 1992 the species was petitioned for listing in the

JEFF HENRY/ROCHE JAUNE PICTURES

United States under the federal Endangered Species Act, then was listed as a candidate species by the U.S Fish and Wildlife Service (USFWS) four years later.

It appeared that the swift fox was about to become the endangered species poster child of the Great Plains.

Then, inexplicably, the foxes began reappearing in Montana. "We started hearing more and more reports from people saying they'd seen swift foxes," says Giddings. Most of the sightings were in the state's north-central region around the Hi-Line between Havre and Glasgow.

The foxes were products of an aggressive reintroduction begun in Saskatchewan and Alberta several years earlier. In 1983, the provinces had begun releasing wild-captured swift foxes from Colorado and Wyoming and captive-bred foxes from Canada. Over the next 14 years, Canadian wildlife biologists reintroduced 900 foxes into suitable habitat, with the hope that a healthy breeding population would develop. Though most of the released foxes died (reintroduced foxes are highly susceptible to predation), enough survived to establish a growing resident breeding population.

Once they learned of the Canadian program, Montana biologists assumed the increased sightings were of swift foxes crossing the international border. But with federal listing looming, the state's Department of Fish, Wildlife & Parks knew it needed proof the rare fox had established a resident population in Montana.

That task was assigned to Zimmerman, the MSU graduate student. In 1996 FWP funded her two-year study in northern Blaine and Phillips counties to estimate swift fox distribution and population density, locate den sites, follow the animals' movements, and determine survival rates. Zimmerman trapped 16 foxes, to which she attached radio collars that monitored the animals' movements. Her most important finding during the study was three separate den sites where adults were successfully raising large numbers of pups.

"That was just huge, because it showed Montana did have a resident breeding swift fox population," says Zimmerman, who now lives in South Dakota.

Tom Dickson is editor of Montana Outdoors.

RAPID RECOVERY

Why were swift foxes thriving in a region where they had all but disappeared? One reason is that Canada and the United States no longer carry out large-scale predator and rodent poisoning programs. Also, many early homesteads have been abandoned and returned to federal ownership, allowing the land to revert back to semi-native habitat. A habitat survey conducted by FWP in the mid-1990s estimated that Montana contained roughly 8 million contiguous acres of suitable swift fox habitat.

That survey and Zimmerman's study were part of a larger swift fox restoration effort. In 1994 ten Great Plains states formed the Swift Fox Conservation Team and began developing a plan to promote the species' recovery and avoid federal listing. The states set standards for population sampling, surveyed their swift fox populations, reviewed the status of existing habitat, and documented whether their populations were rising or falling.

State governments weren't the only ones trying to restore swift foxes. In 1998 the Blackfeet Indian Tribe, Defenders of Wildlife, and the Alberta-based Cochrane Ecological Institute (which rears captive swift foxes) quietly began returning swift foxes to the Blackfeet Reservation. The Blackfeet consider the swift fox, known to them as *Senopah*, as spiritually significant. Dan Carney, Blackfeet tribal wildlife biologist, says 123 swift foxes reared in Canada have been released over the past six years on the reservation, which still contains nearly 1 million acres of the rolling, shrubless grasslands where swift foxes thrive.

In 2000-01 Montana and Canada conducted a joint census in the region straddling the international border. Biologists determined the Alberta and Saskatchewan population had nearly tripled from estimates five years earlier, from 192 to 560. They also estimated Montana's swift fox population to be 211, not including the Blackfeet foxes nor those reportedly moving into southeastern Montana's Powder River and Carter counties from Wyoming.

"We estimate that about 1,000 individual swift foxes are now along the northern Montana–southern Canada region," says Giddings. "When you think how it's grown from virtually nothing in the 1970s, it's really an incredible restoration success story."

It's so successful that FWP may consider opening a swift fox trapping season, though

CAROL POLICH

at a highly regulated level that would allow for just a few animals to be harvested from the Montana population each year. Giddings says trappers, who have strongly supported efforts to reintroduce swift foxes, could provide information on where the foxes are trapped. Carcasses turned in by trappers could be studied by FWP biologists to learn more about swift fox populations and genetics.

Defenders of Wildlife denounces any trapping proposal. "We think it's premature to think of harvesting a species that's just getting a foothold in the state," says Minette Johnson, the conservation group's Northern Rockies field representative. But Giddings maintains that using trappers is a smart way to increase Montana's long-term understanding of swift fox behavior and populations.

Biologists continue to seek more information on the elusive prairie fox. FWP has conducted three statewide surveys of swift fox distribution, collects and investigates reports of swift fox sightings, and plans to team up with Canada soon to conduct a new census along the international border.

Carney says an ongoing study using radio-collared swift foxes on the Blackfeet Reservation has shown that released foxes have established a thriving population.

"We wanted to learn if reproduction is greater than mortality, or if we were just dropping the released foxes into a black hole, so to speak," he says.

Another related study, funded by the federal State Wildlife Grant Program (through Montana FWP) and conducted by University of Montana professor Kerry Foresman, will gather information on the abundance of prey species available to swift foxes on the reservation.

All this work has reassured the USFWS that the swift fox is no longer in peril. In 2001, the agency removed the species as a candidate for federal listing, citing the work done by the Great Plains states through the conservation team to conserve swift foxes.

THERE GOES THE HABITAT

One of the biggest obstacles to further swift fox population expansion is the continual conversion of grasslands to crop fields.

"Some prairies in north-central Montana are still being plowed up for crops," says Giddings.

Swift foxes also struggle to compete with coyotes and red foxes, which both appear to do better than the tiny fox in lands disturbed by human development. Another threat is oil and gas leasing on the region's Bureau of Land Management holdings, which has potential to produce more roads and facilities. Because they den near roads to avoid coyotes, which shy away from traffic, swift foxes can be killed by vehicles. And new development could displace the animals and damage habitat.

As swift foxes have shown, the species is capable of expanding its range into suitable habitat if given the chance. Giddings says the area north of the Missouri River between Havre and Glasgow has one of the largest tracts of shortgrass prairie habitat in Montana and could support the expanding swift fox population.

He asks that anyone who sees a swift fox—identified by its catlike size, yellowish coat, large ears, black muzzle patches, and black-tipped tail—to report the sighting to the nearest FWP office.

"People need to know that swift foxes have returned to the north-central Montana prairie," Giddings says. "If you're anywhere between Great Falls and Glasgow, there's a chance you might see one, and we'd definitely like to hear about it."

A LITTLE MYSTERY Weighing just 5 pounds, the swift fox is the smallest canine in Montana, about half the size of a red fox. Once common across the Great Plains, the speedy predator disappeared from Montana in the mid-20th century and was declared extirpated in 1969. In recent years, biologists have been working to restore the species. On the Blackfeet Reservation (above), more than 100 swift foxes have been released. And in north-central Montana, scientists have found enough dens with pups (right)—successive generations of swift foxes released in Canada in the mid-1980s—to document a breeding population.

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STORY AND PHOTOS BY SAM CURTIS

At FWP's wildlife laboratory in Bozeman, scientists search for answers to perplexing biological questions

Death is ever-present at the Montana Fish, Wildlife & Parks wildlife laboratory in Bozeman. Animal skulls, skeletons, and hides cover tables. Shelves are lined with glass jars of brain, tissue, and limbs. Coolers and freezers are filled with entire animals awaiting necropsy (animal autopsy), like victims in a police morgue. From all this animal mortality come important clues—some microscopic, some as big and obvious as a .44 magnum bullet hole—that lead to improvements in wild animal life, welfare, and management.

On a recent visit to the FWP wildlife lab, I notice several skulls atop a filing cabinet. Each of the shattered, punctured, or cracked crania tells a story, explains Keith Aune, until recently the lab's supervisor. One is from a mountain lion that had its face nearly torn off by an unknown foe. Another is a bear whose eye had been poked out by the skull-crushing bite of another bear. A third comes from a bobcat that had been shot in the head with a .22 bullet.

Aune leads me upstairs to a cavernous room lined with metal shelves piled with labeled boxes then up a ladder to another storage area in the eaves with still more boxes.

"This is probably the largest collection of grizzly bear skulls and skeletons in the world," he says. "We've been collecting them since 1967, and people are still using them for research."

The animal skulls and skeletons, with their telltale clues, represent some of the stories the lab's staff tease out of animal carcasses. Some stories are of birth and health, others of disease and death. All are part of the vast warehouse of information that wildlife managers draw on when making decisions on how to manage Montana's elk, deer, bears, mountain goats, and other wild animals.

"The lab's priorities are dictated by the current needs, issues, and questions coming from FWP wildlife managers and researchers," Aune says. "We exist to provide answers to questions that come up in the day-to-day management of Montana's wildlife."

Aune began supervising the FWP lab in 1989. Recently promoted to head the department's Wildlife Research Unit in Helena, he remains one of the lab's chief authorities. The research facility, he tells me, was first established in 1957, when it became clear to wildlife managers that they could not make sound management decisions without sound scientific information to guide them. At first the lab gathered basic information such as animal anatomy or stomach contents to learn what animals eat. Over time, however, the science of wildlife management moved away from collecting broadly descriptive information to much more focused research meant to answer specific questions.

For instance, the lab helped scientists discover they could learn more about mountain lions by examining the predators' teeth. During a ten-year study of 750 lion skulls sent to the lab by hunters, Montana wildlife biologists were able to determine a lion's age and sex by the wear patterns on its teeth. That information now provides wildlife managers with valuable tools for determining the age structure of harvested mountain lions and for evaluating population trends to make informed management decisions on how many cats can be harvested each year.

FOCUS ON DISEASE

In recent years, the lab's staff has been studying wildlife diseases and how they operate in the environment. Chronic wasting disease (CWD), brucellosis, and West Nile virus—all headline news topics—are among the diseases being studied at FWP's wildlife lab.

On my visit to the laboratory, I meet Neil Anderson in the necropsy room. Recently promoted from lab biologist to lab supervisor, Anderson has just rolled a barrelful of deer heads out from a cooler. He and Jen Southers, a work-study student majoring in wildlife management at Montana State University, are surgically removing brain tissue from the heads. The tissues are later sent to the National Veterinary Services Laboratory (NVSL) in Ames, Iowa, where they are examined for the prion proteins associated with CWD. Over the past five years, FWP's wildlife laboratory has removed brain tissue from more than 4,700 Montana deer and elk heads to monitor for the possible presence of the brain-wasting disease, which, so far, has yet to infect Montana's wild herds.

COOPERATION

Though the wildlife lab houses state-of-the-art equipment and a highly trained and experienced staff, the demands for scientific data are too vast for one facility to fulfill. That's why Montana FWP works cooperatively and shares technical knowledge, expertise, and equipment with Montana State University, the Montana Department of Agriculture, Montana and Wyoming state diagnostic laboratories, and federal agencies such as the U.S. Departments of Agriculture and the Interior.

One such collaboration took place in 2000 when Tom Roffe, a veterinarian and disease ecologist with the Interior Department's Biological Resources Division, came to Montana to study brucellosis in the Greater Yellowstone Ecosystem. He called Aune, the region's brucellosis expert, who set him up with office space, infrastructure support, and use of the lab. In return, Roffe provided in-kind help and services, such as teaching FWP biologists about wildlife capture and immobilization techniques. "I'm also a trained pathologist," Roffe adds. "So Keith and Neil have called me in and asked my advice on forensic matters." The collaborative arrangement has benefited both the federal and the state agencies at little expense to either.

"The multidisciplinary, team approach has really become the foundation of all wildlife research these days," says Aune. He hands me a study published in the *Journal of Wildlife Management* titled "Brucellosis in Yellowstone Park Bison: Quantitative Serology and Infection." The lead authors include Roffe, Aune, and Jack C. Rhyan, of the NVSL. The study demonstrates the cooperative nature of wildlife science and the type of published research the wildlife lab helps produce.

CRIME BUSTERS

The lab also plays a large role in legal matters, such as investigations into poaching. After Anderson has finished his work on CWD for the day, he hauls a dead grizzly bear out of the lab cooler on a ceiling hoist. The bear was brought in by special agents from the U.S. Fish and Wildlife Service who think it was killed by a gunshot wound. If so, it could be a criminal matter, and they'd like to have the bullet and know its trajectory.

"Taking a grizzly bear from here to the USFWS Forensic Laboratory in Ashland, Oregon, isn't easy," explains Aune. "So we support the federal agents and our wardens by giving them some immediate forensic information that they can go right out and use in their investigations."

The lab's forensic work centers mostly on determining how grizzly bears or gray wolves died and whether or not they were killed illegally. But the lab also investigates possible environmental pollution. One of the most highly publicized cases was in 1995, when dead snow geese were found in the water filling the Berkeley Pit open-pit mine in Butte. When the lab's scientists determined the birds had died from water contaminated by mining wastes, the news was covered nationwide.

The range of research conducted at the laboratory is mind boggling. As Aune ticks off a list of studies done over the past decade, it seems there isn't a mammal they haven't investigated in one way or another: pine marten winter diets, otter reproduction, coyote age structure and reproduction, bear biogeographics, mountain lion mortality, wolverine reproduction, and more. With the help of the lab, a former neurosurgeon is even conducting a study on bear brain microanatomy.

During winter, Anderson focuses his attention on furbearers such as wolverines, otters, and fishers. Trappers are required to submit the carcasses to the lab after the animals are skinned. While the skins are tanned elsewhere to become hats and coats, the carcasses are examined by Anderson for clues that reveal something about the animals. He's especially interested in wolverines, a secretive and reclusive species biologists know little about.

"When a carcass comes in, we take out the reproductive tracts of females and count pregnancy scars in the ovaries to determine potential reproductive rate," he says. "Then we take out the stomach and the colon to examine food habits."

Working with Christine Cegelski, a research student from the University of Idaho, Anderson takes tissue samples to test for disease and determine genetic distri-

Sam Curtis is a freelance writer in Bozeman.

BLOODY BUSINESS Working in the wildlife lab is not for the squeamish. Neil Anderson (above) begins a necropsy to determine why a gray wolf died and (left) checks the identity of a grizzly brought in to determine whether it was killed illegally. Far left: Anderson and MSU student Jen Southers remove brain tissue from dead elk and deer. Samples are placed in bottles (above left) and sent to a federal lab in Iowa to test for chronic wasting disease.

bution. "This gives us a pretty good picrure of the wolverine," he says.

What the scientists learn, wildlife managers use. For example, if trappers are killing too many female wolverines, that could harm populations and require changes in trapping regulations. Also, the genetic work Anderson has done shows Montana supports three or four distinct wolverine populations of different sizes. This information may lead FWP to tailor trapping regulations to suit individual wolverine populations.

"Until this study we didn't have that kind of information," he says.

SKELETON TRUNKS

The lab has other purposes, too. It sends out trunks of hides, skulls, and other materials used at Montana schools ranging from elementary to college level. It also loans 20 to 50 specimens to schools and agencies around the country each year.

The lab coordinates radio frequencies for biotelemetry and helps make radio telemetry devices such as the tracking collars used to follow deer, elk, bears, and bison. And it manages the distribution, licensing, and development of wildlife-immobilizing drugs. After talking to Aune, I was surprised to learn that much of this activity occurs outdoors.

"Don't get the idea that we're just lab rats, looking through microscopes all the time," he says, laughing. "About a quarter of our work takes place in the field."

The day of my visit, lab technician Coleen O'Rourke has just returned from a game check station near Philipsburg, where she was collecting brain tissue samples from deer as part of the CWD surveillance. Anderson is frequently called to test captured bighorn sheep for a wide range of diseases before the animals are released in new locations.

Aune spent many days in Yellowstone Park monitoring bison fetuses intentionally soaked in brucellosis to study the persistence of the bacreria in fetal tissue. And in a related study, he and colleagues monitored scavenging activity on uninfected bison fetuses in the Yellowstone ecosystem. These and other studies are helping scientists better understand how brucellosis is spread in the wild.

"Both our field work and our work in the lab are directly related to the real world and to real management issues," Aune says. "When we study how a disease operates in an environment, for example, we can define how it is transmitted and the ecological processes going on and then try to help create healthier wildlife popularions."

JULY

1 The First Mountain Man, *Giant Springs State Park, 8 p.m.* Meet historical figure John Colter. (406) 454-5870.

1, 2, 3 Discover Travelers' Rest, *Travelers' Rest State Park, 8 a.m.-8 p.m.* A free three-day festival with reenactors, bird watching, children's activities, musical performances, and educational and exploratory activities. (406) 273-4253.

2, 9, 16, 23, 30 Friday Morning Interpretive Walks, *Giant Springs State Park, 8:30 a.m.* (406) 454-5870.

2, 9, 16, 23, 30 Interpretive Talk, *Rainbow Falls Upper Overlook, Giant Springs State Park, 1 p.m.* History of the waterfalls. (406) 454-5870.

3, 10, 17, 24, 31 Campfire Talk Series, *Black Sandy State Park, 7 p.m.* Natural history and historical topics. (406) 495-3270.

3, 10, 17, 24, 31 Summer Speaker Series and Marshmallow Roast Social, *Missouri Headwaters State Park, 7 p.m.* Perspective of the 19th-century American West. (406) 994-6934.

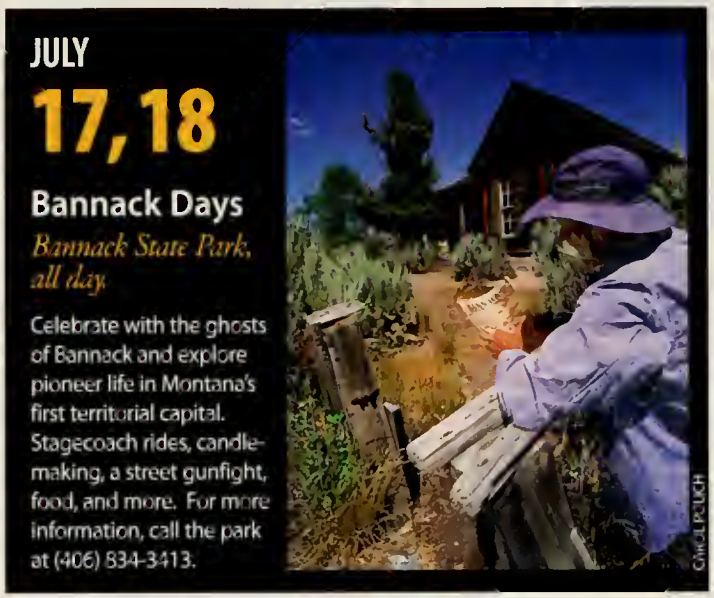
3, 10, 17, 24, 31 North Shore Interpretive Hikes, *Giant Springs State Park, 9 a.m.* Hike along a beautiful 2-mile portion of the Missouri River. (406) 454-5870.

3, 10, 17, 24, 31 Interpretation at the Great Falls of the Missouri River, *Giant Springs State Park, 1 p.m.*. History of the waterfalls. (406) 454-5870.

3, 10, 17, 24, 31 Uncover Montana: A Weekly Series Exploring Our Past, *Travelers' Rest State Park, 8 p.m.* Western Montana history. (406) 273-4253.

6, 13, 20, 27 Discovery Days, *Spring Meadow Lake State Park, 7 p.m.* Interactive natural and local history for grade-schoolers. (406) 495-3270.

8 A Trapper's Life with the Blackfeet, *Giant Springs State Park, 8 p.m.* (406) 454-5870.


JULY
17, 18
Bannack Days
Bannack State Park, all day
Celebrate with the ghosts of Bannack and explore pioneer life in Montana's first territorial capital. Stagecoach rides, candle-making, a street gunfight, food, and more. For more information, call the park at (406) 834-3413.
CAROL PETUCH

10 Cardboard Cup Regatta, *Spring Meadow Lake State Park, 11 a.m.* Open to all. Call for rules and details. (406) 495-3270.

10 Victorian Music Players, *Bannack State Park, 7 p.m.* (406) 834-3413.

11 Spring Meadow Lake Triathlon, *Spring Meadow Lake State Park, 8 a.m.* (406) 449-7644.

15 Mountain Men in the West, *Giant Springs State Park, 8 p.m.* (406) 454-5870.

16 Troubled Trust: Lewis and Clark's Legacy and the Indian Frontier, *Lewis and Clark Caverns State Park, 8 p.m.* (406) 287-3541.

17 Ladies Fishing Tournament, *Hell Creek State Park, 7 a.m.* (406) 232-0926.

17, 18 Bannack Days, *Bannack State Park, 9 a.m.* A celebration of pioneer life. (406) 834-3413.

22 History of Fort Union, *Giant Springs State Park, 8 p.m.* (406) 454-5870.

23 A Pioneer Legacy, *Lewis and Clark Caverns State Park, 8 p.m.* Readings from pioneer diaries. (406) 287-3541.

23, 24 Hell Creek Walleye Tournament, *Hell Creek State Park, 7 a.m.* (406) 232-0926.

29 Skinning, Cutting and Cooking a Beaver, *Giant Springs State Parks, 8 p.m.* Bring your appetite. (406) 454-5870.

30 River Quest of Lewis and Clark, *Lewis and Clark Caverns State Park, 8 p.m.* (406) 287-3541.

31 Corks of Discovery, *Lewis and Clark Caverns State Park, 8 a.m.* Float the Jefferson River with park staff. (406) 287-3541.

AUGUST

3, 10, 17 Discovery Days Series, *Spring Meadow Lake State Park, 7 p.m.* Interactive natural and local history for grade-schoolers. (406) 495-3270.

4, 11, 18, 25 Wednesday Lunch Hour Programs, *Giant Springs State Park, 12 p.m.* Various topics. (406) 454-5870.

5 History of Fort Benton, *Giant Springs State Park, 8 p.m.* (406) 454-5870.

6, 13, 20, 27 Friday Morning Interpretive Walks, *Giant Springs State Park, 8:30 a.m.* Various topics. (406) 454-5870.

6, 13, 20, 27 Interpretation at Rainbow Falls, *Giant Springs State Park, 1 p.m.* History of the waterfalls. (406) 454-5870.

7 Kids Fishing Tournament, *Hell Creek State Park, 7 a.m.* (406) 232-0926.

7, 14, 21, 28 Crow Life Ways, *Chief Plenty Coups State Park, 1 p.m.* Traditional Indian culture and customs. (406) 252-1289.

7, 14, 21 Campfire Talk Series, *Black Sandy State Park, 7 p.m.* Natural history and historical topics. (406) 495-3270.

7, 14, 21, 28 Summer Speaker Series and Marshmallow Roast Social, *Missouri Headwaters State Park, 7 p.m.* Perspective of the 19th-century American West. (406) 994-6934.

7, 14, 21, 28 North Shore Interpretive Hikes, *Giant Springs State Park, 9 a.m.* (406) 454-5870.

7, 14, 21, 28 The Great Falls of the Missouri River, *Giant Springs State Park, 1 p.m.* History of the waterfalls. (406) 454-5870.

7, 14, 21, 28 Uncover Montana, *Travelers' Rest State Park, 8 p.m.* Western Montana history. (406) 273-4253.

8, 9, 10, 11 Traditional Trades, *Travelers' Rest State Park.* Learn 19th-century trades. (406) 273-4253.

12 Trapping History, *Giant Springs State Park, 8 p.m.* Meet historical figure Joseph LaBonte, trapper and trader. (406) 454-5870.

13 Lewis and Clark for the Birds, *Lewis and Clark Caverns State Park, 8 p.m.* (406) 287-3541.

13, 14 Theater in the Park, *Makoshika State Park, 5:30 p.m.* Dinner and theater. (406) 377-6256.

14 Community Artists Day, *Giant Springs State Park, 8 a.m.* Painting and drawing. (406) 454-5870.

19 Items Mountain Men Used, *Giant Springs State Park, 8 p.m.* (406) 454-5870.

27 Star Gazing, *Lewis and Clark Caverns State Park, 9 p.m.* (406) 287-3541.

Golden-Mantled Ground Squirrel

(Spermophilus lateralis)

Occasionally hikers in Glacier or Yellowstone national parks will report seeing a "giant chipmunk." What they probably saw was a golden-mantled ground squirrel.

APPEARANCE

It's no wonder people mistake the golden-mantled ground squirrel for a chipmunk on steroids. Both have black stripes running down their back and both can be downright brazen in their attempts to get food from hikers and picnickers. The biggest physical difference between the two is size. A chipmunk runs about 8 inches long and weighs around 2 ounces, while a golden-mantled ground squirrel is 9 to 12 inches long and weighs between 4 and 14 ounces. The squirrel's back is brownish gray, with one white stripe bordered by black stripes running down each side. Unlike the chipmunk, the golden-mantled ground squirrel's stripes don't extend up to its face. The squirrel's name comes from the golden brown or russet mantle over its head and shoulders. Whitish fur rings the eyes. To clean its brightly colored fur, the squirrel rolls in dust and preens with its claws.

FOOD

Scientists classify the golden-mantled ground squirrel as a true ground squirrel, though it will climb trees to reach seeds. Its genus name *Spermophilus* is Greek for "seed loving." Like other ground squirrels, the golden-mantle packs seeds and fruit in its cheek pouches and stores the food in burrows, puts on a thick layer of fat, and hibernates in winter. Golden-mantled ground squirrels eat their stored food in early spring, when seeds and fruit are scarce. Some biologists believe that the animals may also awaken at times during the winter to feed on their cache. In captivity, hibernating golden-mantled ground squirrels woke for a short time every two weeks. In addition to seeds and fruit, the omnivorous ground squirrels eat fungi, forbs, insects, bird eggs, small vertebrates, and carrion.

SOUND

Though the golden-mantled ground squirrel remains silent most of the time, it can vocalize. When alarmed, it chirps and squeals. Though not especially aggressive, it will growl when fighting with other ground squirrels.

JOHN FRALEY

BY JOHN FRALEY

John Fraley is a Montana Fish, Wildlife & Parks information officer in Kalispell.

BEHAVIOR

The golden-mantled ground squirrel's annual cycle of life is to eat through the short summer and get fat, sleep all winter, wake up and breed, then do it all over again. An easy way for the squirrels to get food is by begging from hikers. Though tempting, it's not a good idea to feed these or any other wild animals. It distracts them from searching for natural foods, which they must eat in large quantities to survive. Unlike most other Montana ground squirrels, the golden-mantle is a loner. It only spends time with others of its kind as a youngster with its mother and siblings.

REPRODUCTION

Males usually emerge from hibernation a few days earlier than females, anywhere from late March to May, depending on the elevation. Breeding occurs shortly after the females emerge. Following a gestation period of 28 days, a female produces a litter of roughly five young, which she rears in a nest within an underground burrow. Newborn golden-mantled ground squirrels are naked and blind. They are weaned after three to six weeks. In late summer, the young head out on their own.

HABITAT

Golden-mantled ground squirrels are commonly found near rocks and talus slopes in mountainous areas across the western United States and Canada. They usually live in coniferous forest openings but can range above timberline. A golden-mantled ground squirrel digs its own burrow, which can extend for 100 feet, usually with an entrance near a log or boulder. Its home range is 1 or 2 acres. Within this area, the squirrels are preyed on by hawks, owls, coyotes, foxes, and bobcats.

STATUS IN MONTANA

The golden-mantled ground squirrel is a nongame species unprotected by regulations. It is common in mid to high elevations of western Montana, so it is not viewed as an agricultural pest, as are some ground squirrels. Carbon County is the farthest east the species has been documented in Montana.

ROOM WITH A VIEW

The first documented discovery of Lewis and Clark Caverns was in 1898. It took another 37 years for someone to find the Paradise Room. Work crews stumbled upon the massive underground room while preparing the caverns to become Montana's first state park. They were mesmerized. The weirdly beautiful Paradise Room contains a rock column 34 feet in diameter, another one 40 feet tall, and bizarre formations resembling a Swiss village, a giant candlestick, and even a cartoon frog. The room is the deepest cavern in the park and claims the fastest-growing formations, which grow 1 cubic inch every 10 years. Take a tour of Lewis and Clark Caverns State Park beginning on page 14. Photo by Craig and Liz Larcom.

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